HSFE70-14-R-0005

FEMA Rugged Base Performance Requirements

Version BB

5/1/2014

Rugged Base Performance Requirements MHUS 2014
All Manufactured Homes

General

The Federal Emergency Management Agency (FEMA) provides Manufactured Housing Units (MHUs), that meet the Housing and Urban Development standards as set forth in 24 CFR 3280 (Manufactured Home Construction Safety Standards "HUD Code").The Robert T. Stafford Disaster Relief and Emergency Assistance Act, as amended and related authorities, as of April 2013, authorizes FEMA to provide temporary housing units, acquired by purchase or lease, directly to individuals or households who, because of available housing would be unable to make use of financial assistance. The Stafford Act also describes the decision criteria for determining which types of assistance will be provided; Stafford Act, Section (408)(b)(2)(B). Considerations include of cost effectiveness, convenience to the individuals and households, and such other factors as the President may consider appropriate. Consistent with these authorities, in the event that disaster survivors are unable to find suitable housing using financial assistance then FEMA Individual Assistance requires housing units available through purchase or lease.
The Agency intends to reuse these manufactured homes to house disaster survivors in several disaster events. These units will be subjected to extended road travel (in excess of 6,000 miles over their lifetime), multiple installations and un-installations, and a wide variety of weather conditions. The manufactured homes *shall* meet all of the requirements including having a complete Heating, Ventilation and Air Conditioning (HVAC) system and being furnished as described.

Legal Requirements

The manufactured homes (as defined in 24 CFR 3280) being procured using these Performance Requirements *shall* meet and comply with all appropriate HUD requirements, regulations, standards, and guidance. *The Rugged Base Performance Requirements does not constitute any expressed or implied deviation from or waiver of any requirements of the U.S. Department of Housing and Urban Development (HUD) Standards, Regulations, or its amendments or interpretative bulletins thereof. These units shall comply with HUD Standards, Regulations, and other appropriate HUD guidance and require a HUD Certification label to be placed as required in 24 CFR 3280.11 and a HUD Data Plate to be placed inside the unit as required in 24 CFR 3280.5. All units shall comply and meet the HUD approval process. These requirements do not provide the contractor with a waiver of the approval process for receiving an "Alternative Construction Letter (ACL)."FEMA anticipates that the contractor will have to apply for one or more ACL to meet the requirements of these FEMA Rugged Base Performance Requirements.*

Additionally, FEMA procures MHUs to support disaster survivors with access and functional needs. Manufactured Housing built to meet this requirement is built in accordance to Architectural Barriers Act, 42 U.S.C. 4151-4157. The current construction requirements for the ABA are the Uniform Federal Accessibility Standards (UFAS 1984.)

A downloadable copy of UFAS can be found at http://www.access-board.gov/ufas/ufas.pdf and a searchable copy can be found at http://www.access-board.gov/ufas/ufas-html/ufas.htm. Technical assistance on UFAS is available from the U.S. Access Board by phone at 800-872-2253 or by email at TA@access-board.gov.

Scope

The Rugged Base Performance Requirements and a combination of regulations represent the requirements for FEMA Manufactured Homes to house disaster survivors in several disaster events.

In the Rugged Base Performance Requirements there are series of numbered *shall*s ("*shall (#)*"). For each numbered *shall* ("*shall (#)*"). , the contractor will have to fill and submit the Rugged Base Performance Requirements Matrix (Section J: Attachment: 3) to demonstrate compliance.

Every other *shall* in the solicitation or in this document will have to be met, however only the numbered *shall*s ("*shall (#)*"). will be in the Rugged Base Performance Requirements Matrix (Section J :Attachment: 3).

Requirement Version Identifier

This version of the requirements is designated:

BB

Any changes made to these requirements will be designated as follows:

BC for the first change
BD for the second change
Etc.

Summary of Unit Features

This information is a general summary of the requirements.

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1.0. Compliance With 24 CFR 3280		
1.1.	**24 CFR 3280 (a.k.a. "HUD Code")**	All units *shall (1)* be built to HUD Code as defined in *24 CFR 3280 & 3282.* All units *shall (2)* bear the HUD label prior to shipment, and *shall (3)* meet any solicitation-specific HUD defined ratings for Wind Zone, Thermal Zone, and Roof Load.
2.0. Compliance With International Building Code (IBC)		
2.1	**International Building Code (IBC)**	Each unit *shall (4)* include full house wrap meeting the standards set forth in the *2009 International Building Code, Section 1403.2 Weather Protection.*
3.0. Compliance With Uniform Federal Accessibility Standards (UFAS)		
3.1.	**Uniform Federal Accessibility Standards (UFAS)**	All units designated as "UFAS" or "Accessible" *shall (5)* be fully compliant with applicable UFAS requirements and this document. UFAS "reminders" included throughout these requirements are used to highlight certain standards, but are not all-inclusive, and the contractor *shall (6)* be responsible for ensuring full compliance with applicable UFAS requirements. FEMA has provided a DRAFT version of a HUD developed guide/manual titled "Design Details for Accessible Disaster Relief Housing."(Section J: Attachment 11).This guide/manual provides supplemental information for this solicitation for UFAS compliance. While this draft guide provides design suggestions and is provided to assist with the understanding of the UFAS requirements, the guide/manual does not supersede any of the UFAS requirements which are defined in regulation. In addition, the guide/manual does not supersede the Rugged Base Performance Requirements (Version BA) , the Statement of Work(SOW) or any other part of this solicitation.
4.0. Zoning Requirements		
4.1.	"FEMA Northern Units" Manufactured Housing Design Criteria *shall (7)* be in Accordance with *24 CFR 3280.506* Thermal Zone 3 (a U-Value for Zone 3)	
4.1.1.	Thermal Identification *shall (8)* have a Painted Blue Draw Bar	
4.2.	FEMA "Southern Units" Manufactured Housing Design Criteria *shall (9)* be in Accordance with 24 CFR 3280.506 for Thermal Zone 2 (U-Value for Zone 2)	
4.2.1.	Thermal Identification *shall (10)* have a Painted Red Draw Bar	

4.3.	FEMA "CONUS" unit *shall (11)* be able to be deployable in Contiguous United States. Contiguous United States: refers to the 48 adjoining U.S. states on the continent of North America, including the District of Columbia.
4.3.1.	Thermal Identification *shall (12)* have a painted **Green Draw Bar**
4.4	"FEMA Units" (all) Manufactured Housing Design Criteria *shall (13)* be in Accordance with *24 CFR 3280.305(c)* Structural design requirements - Wind, snow and roof loads for Wind Zone III.
4.5	"FEMA Units" (all) Manufactured Housing Design Criteria *shall (14)* be in Accordance with *24 CFR 3280.305(c)* Structural design requirements – roof load Northern Zone

Zone Requirements Table

	FEMA Northern	**FEMA Southern**	**Continental(CONUS) USA unit**
Thermal Zone U/O	U/O Zone III	U/O Zone II	U/O Zone all
Wind Zone	Zone III	Zone III	Zone III
Roof Load	Northern Zone	Northern Zone	Northern Zone

5.0. Size and Configurations

		3-Bedroom	2-Bedroom	Std. 1 Bedroom - Unit	Express (1 Bedroom) -Unit
5.1.	**Exterior Length**	Final dimensions *shall (15)* be proposed by manufacturer, but not to exceed sixty feet(60')(box length)	Final dimensions *shall (16)* be proposed by the contractor	Final dimensions *shall (17)* be proposed by the contractor	Final dimensions *shall (18)* be proposed by the contractor, but not less than forty four (44) feet and not to exceed forty eight(48') feet (Box length)

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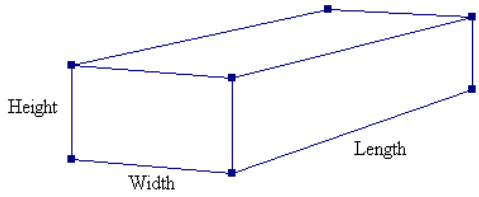
5.2.	**Exterior Width**	Final Dimensions *shall (19)* not exceed fourteen feet (14') (box width)	Final dimensions *shall (20)* be proposed by contractor, but not to exceed fourteen feet (14')(box width)	Final dimensions *shall (21)* be proposed by the contractor, but not to exceed fourteen feet (14')(box width)	*Final dimensions *shall (22)* be proposed by the contractor, but not be less than eight (8') and not to exceed eight feet and one half (8.5') (transport width) Slide out portions of the MHU are not acceptable
5.3.	**Area**	Acceptable manufactured home size (Area) for the 3-Bedroom units *shall (23)* be a maximum of eight-hundred forty square feet (840 sq. ft.)	Acceptable manufactured home size (Area) for the 2-Bedroom units *shall (24)* be a maximum of seven-hundred forty square feet (740 sq. ft.)	Acceptable – manufactured home size for the 1- Bedroom units *shall (25)* be a maximum of five-hundred seventy-five square feet (575 sq. ft.)	Acceptable manufactured home size (area) for the express unit *shall (26)* be between a minimum of three hundred and fifty two square feet (352 sq. ft.) and a maximum of four hundred and eight square feet (408 sq. ft.)(Refer to 5.4)
5.4	**Express unit (1 bed room)**	FEMA understands that the requirements for all manufactured homes as presented in the FEMA Rugged Base Requirements may exceed the physical space requirements as determined by the specific measurements of the Express Unit. However, It *shall* meet the "HUD" Code and regulations. FEMA requires that there is a Standard (Non-UFAS) and UFAS variant of the Express Unit. Whenever is not feasible to meet a certain requirement, FEMA allows the Offerors to submit an alternative to meet the specific requirement (Refer to Section L)			

5.5	**Building Area Definition**	FEMA will calculate the manufactured home square footage, and dimensions will be calculated using the definitions provided in *24 CFR § 3280.2*, definitions of length and width. For example a box with exterior dimension of ten feet (10') long, (measured exterior corner to exterior corner) along one side, and an exterior dimension of five feet (5') long (measured exterior corner to exterior corner) along the other exterior side, will have a calculated area of fifty square feet (50 sq. ft.). 
6.0. Living Room		
6.1.	**Furnishing**	Each unit *shall (27)* have a designated, usable living room area. Each living room area *shall (28)* be furnished with one (1) sofa (double/full size mattress with dimensions approximately 54" x 75"), one (1) armchair (constructed of non-permeable material such as wood, without fabric covering), one (1) coffee table, and one (1) end table. All furnishing *shall (29)* be standard sizes and commercially available. All furniture *shall (30)* be assembled with all packing material removed from the manufactured home. Furniture *shall (31)* be packed in a manner so that it is not damaged during multiple transportations and/or in the unpacking process. Quality furniture requires good construction (i.e., free of defects) and the sofa *shall (32)* be soft, comfortable (provide comfort or physical relief, free of causing affliction or pain to the occupant), safe, be free of sharp, abrasive surfaces, edges and durable for up to five (5) years in storage and/or eighteen (18) months during occupancy. All fabric or material used *shall (33)* sustain rough and tumble usage. Fabric or material *shall (34)* meet the federal flammability standards. All fabric or material *shall (35)* have stain resistance protection and sustain rough and tumble usage

<table>
<tr><td>6.2.</td><td>Telephone and cable Television Outlets</td><td colspan="4">Cable Television Jack: Each unit shall (36) have a pre-wired television jack installed in the living room. The cable jack shall (37) be wired to a designated junction box for easy connection by a service provider.

Telephone Jack: Each unit shall (38) have a pre-wired telephone jack installed in the living room. The telephone jack shall (39) be wired for two lines or a telephone jack with double outlets. The telephone jack shall (40) be wired to a designated junction box for easy connection by a service provider.

Cable and television jacks shall (41) be placed so that when the wires are plugged in it does not interfere with the usability of the unit and any safety issues such as trip hazards are avoided. At the same time, the jacks shall (42) be placed in a matter that furniture does not have to be moved to access the cable, and telephone jacks.</td></tr>
<tr><td colspan="6">7.0. Kitchen/ Dining Room</td></tr>
<tr><td>7.1.</td><td>Furnishing</td><td colspan="4">Each unit shall (43) have a designated safe and usable kitchen/dining room area.

The dining room area shall (44) be furnished with dinette table. The table shall (45) accommodate all chairs listed for the table size below without any extensions or folding portions of the table having to be open (table sizes are listed as the minimum acceptable size.)

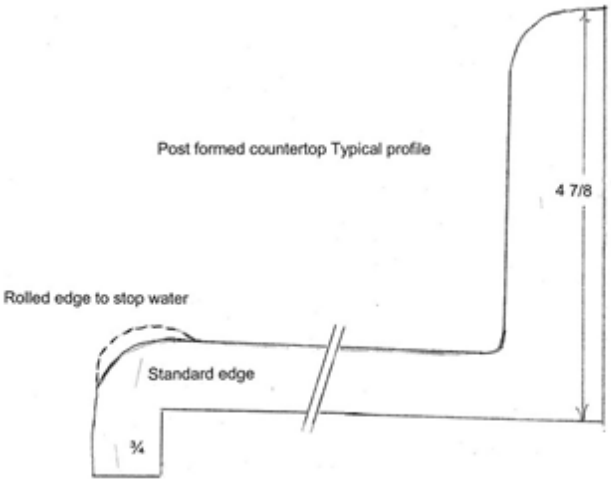
Furnishing designated for the dining area shall (46) not have any porous fabric material. Furniture for the dining area shall (47) be composed of wood.

All dining room area furniture shall (48) be assembled with all packing material removed from the manufactured home.

All dining room area furniture shall (49) be secured in a manner so that it is not damaged during multiple transportations or in the unpacking process.

All furniture construction should adhere to the national standards of the appropriate furniture industry</td></tr>
<tr><td></td><td></td><td colspan="4">Minimum requirement for table’s by unit type</td></tr>
<tr><td></td><td></td><td>3-Bedroom manufactured home requirement</td><td>2-Bedroom manufactured home requirement</td><td>1-Bedroom manufactured home</td><td>Express Unit manufactured home</td></tr>
</table>

		Furniture *shall (50)* be one (1) table, sized approx. 3' x 6'6", with six (6) chairs to accommodate six (6) adults Note: All chairs *shall* be the same size and matched	Furniture *shall (51)* be one (1) table, sized approx. 3' x 5', with four (4) chairs to accommodate four (4) adults Note: All chairs *shall* be the same size and matched	Furniture *shall (52)* be one (1) table, sized approx. 3' x 5', with four (4) chairs to accommodate four (4) adults Note: All chairs *shall* be the same size and matched	Furniture *shall (53)* be one (1) table, approx. sized 3' x 5', with four (4) chairs to accommodate four (4) adults Note: All chairs *shall* be the same size and matched
7.2.	**Cabinetry**	The manufacturer *shall (54)* provide and install upper and lower cabinets *shall (55)* be equal to or better than Kitchen Cabinet Manufacturers Association (KCMA) certified cabinets. The contractor have the option to perform self-certification (The contractor shall indicate in the Attachment 3 how the cabinets chosen or built will perform equal or better than the KCMA certified cabinets) The minimum acceptable linear inch length for the upper (wall) cabinet *shall (56)* be thirty-six inches (36"). The Contractor *shall (57)* explore the option of adding additional upper (wall) cabinets, additional upper cabinets are desirable. The minimum acceptable linear inch length for the lower cabinet *shall (58)* be thirty-six inches (36"). An acceptable lower cabinet *shall (59)* have a single drawer and two doors. To be considered as an acceptable, access to the cabinets and counter top shall not be blocked by other appliances and shall be usable. The Contractor *shall (60)* explore the option of adding additional lower cabinets, additional lower cabinets are desirable. The upper and lower cabinets *shall (61)* have fixed shelving. All cabinets *shall (62)* be constructed with a finish compatible with the interior decor. A base cabinet which supports the kitchen sink does not meet the requirement for the base kitchen cabinet. Kitchen design should consider the risk and reduce the probability of accidental ignition of cabinets adjacent to cooking ranges			

7.3.	**Kitchen Counter Tops**	The Contractor *shall (63)* install post formed laminated counter top(the counter top formed from a single piece of laminate that's shaped into a backsplash at the rear and a rounded edge in front) or *shall (64)* be an industry standard countertop with a back splash property sealed and water resistant to last for both, storage (nominal 5 years) and use(1-2 years). To be considered as acceptable, access to the cabinets and counter top shall not be blocked by other appliances and shall be usable. The minimum size of the backsplash height *shall (65)* be 4 inches.  Figure: Example of a post formed laminated countertop All units *shall (66)* include a minimum of thirty-six inches (36") of continuous counter top space in the kitchen supported by a base cabinet that has a single drawer and two doors. Kitchen space *shall (67)* accommodate food preparation. Access to counter top *shall (68)* be unobstructed. All surfaces subject to food preparation *shall (69)* be washable, without open joints or comprised of materials that cannot be sanitized and/or are not suited for long term use.

7.4.	**Kitchen Sink**	Each home *shall (70)* have a completely installed, self-rimming, double bowl, **stainless steel sink** with one spray nozzle with at least twenty- four inch (24") extension when extended. Each sink bowl *shall (71)* be fitted with a metal strainer basket assembly and an appropriately sized strainer basket. Kitchen sink *shall (72)* be a minimum of: 33"L x 22"H Basin depth: 8" Double equal basins Hot water and drain pipes *shall (73)* be insulated to protect against contact unless they are contained in a kitchen sink base cabinet. Kitchen pipes and fixtures *shall (74)* have the adequate protection and insulation to avoid causing injuries whether the manufactured home is occupied or not. Kitchen pipes and fixtures *shall (75)* have the adequate protection and insulation to avoid freezing. There *shall (76)* be no sharp or abrasive surfaces under the kitchen sink. Note: All faucet assemblies *shall* be dual shut off valves
7.5.	**Appliances**	The Contractor *shall (77)* ensure that all appliances are high-efficiency and Energy Star qualified (The US Department of Energy list of appliances with Energy Star ratings). The Contractor *shall (78)* leave in place all labels that are affixed to the appliances and which designate that the appliances are high-efficiency and/or Energy Star qualified. All appliances *shall (79)* be unpacked, installed and packing material *shall (80)* be removed from the manufactured home. All appliances *shall (81)* be secured in a manner so that it is not damaged during multiple transportations or interfere when the unit is occupied. Items used to secure appliance doors *shall (82)* be easily removed(i.e., Refrigerator Door ,Oven doors)

7.5.1.	**Range / Oven**	The contractor *shall (83)* install a thirty inch (30") self-cleaning electric cooking range / oven. It *shall (84)* include four (4) burners, a thermostatically controlled lighted oven, and indicator lights that show that the burners are operating or are hot. Range / oven controls *shall (85)* be located so that the user does not have to reach across burners to use the range / oven. The oven *shall (86)* have insulation on all sides to prevent excessive heat exposure. The range / oven *shall (87)* be secured to the floor to ensure that it is not damaged during multiple transportations, affects the structure of the MHU, interfere when the unit is occupied, compromise safety of the occupants or becomes damaged or damage the MHU unit during transportation. The range/oven *shall (88)* be secured using a minimum of two brackets. The range / oven *shall (89)* be plugged into the receptacle (receptacle for range is flush mounted in the wall behind range). Brackets used can include the typical angle bracket / gusset that supplied with a range / oven and an additional angle bracket / gusset. The Offeror's have the option to secure the range/oven to the floor using an alternative method as long it meets or exceeds the minimum requirement.
7.5.2.	**Power Vented(Range) Hood**	A lighted, power-vented range hood *shall (90)* be installed (one-piece construction) unless a combination microwave / hood / fan / light is installed. A separate sidewall vent (that is not part of a hood or microwave) is not acceptable. Note: See Ventilation Section for fan exhaust requirements
7.5.3.	**Refrigerator**	Each unit *shall (91)* be equipped with an 18 cubic feet (c.f.) or equivalent frost-free refrigerator with freezer. The refrigerator *shall (92)* be secured to the floor. Also, the refrigerator *shall (93)* be secured at least to one wall stud. The refrigerator *shall (94)* be on its own circuit. The refrigerator *shall (95)* be able to be opened from the inside. The refrigerator *shall (96)* be located so that when the door swings open it does not impede access when approaching from the stove, sink and food preparation area. The refrigerator *shall (97)* not be plugged in at time of delivery to FEMA.
7.5.4.	**Microwave Oven**	Each unit *shall (98)* include a 1.2 c.f. microwave (minimum) with child lock unless this requirement is met through the use of a combination microwave / hood / fan / light. Note: Refer to ventilation section for fan exhaust requirements

7.6.	**Laundry Area** **Washer and Dryer Hook-up**	All Manufactured Homes *shall (99)* have a laundry area designated for the washer and dryer including the plumbing, electrical connections, and dryer vent. The washer / dryer area *shall (100)* be designed to accommodate a standard size side by side washer/dryer (i.e., 27" wide, 36" high and comes out from the wall 29 inches). The Dryer vent *shall (101)* have an exhaust to the exterior so that when connecting the dryer duct, the dryer exhaust to the outside. The Dryer exhaust system *shall (102)* not terminate under the home. The Washer and Dryer hookup *shall (103)* not require any modification to install a washer and/or dryer. The manufactured home *shall (104)* not include a washer and dryer
8.0. Bedrooms		

8.1.	**Furnishing**	All units *shall (105)* provide sleeping capacity to accommodate two persons in each bedroom. On the floor plan the bedrooms *shall (106)* be designated as follows: • Master bedroom – Bedroom 1 • Second bedroom – Bedroom 2 • Third bedroom – Bedroom 3 Bedrooms *shall (107)* be designated by size with the smallest bedroom being designated with the highest number Each bedroom *shall (108)* be furnished with the following: • Bed(s) for two persons (including mattress, box spring and metal bed frame) defined as one of the following: o Master Bedroom – One standard full size bed (54" x 75"); o Second Bedroom – One standard full size bed (54" x 75"); o Third Bedroom – Two XL twin size mattresses (each 39" x 80") placed on a free standing bunk bed frame, and not built into the manufactured housing unit • One five-drawer dresser (minimum 48" H x 33" W x 18" D) • One nightstand or equivalent In Bedrooms 1 and 2: • One of the short sides of the bed *shall (109)* be designated as the head of the bed, and that short side *shall (110)* be placed against a wall • Of the three remaining sides, two *shall (111)* have a minimum of twelve inches (12") between the bed and the nearest wall • The final side of the bed *shall (112)* have open access of at least twenty-four inches (24") from the nearest wall In Bedroom 3: • One of the short sides of the bed *shall (113)* be designated as the head of the bed and that short side *shall (114)* be placed against a wall • One long side *shall (115)* be placed against a wall located perpendicular to the wall where the head of the bed is located • There *shall (116)* be a minimum of twelve inches (12") between the non-head, short edge of the bed and the nearest wall • The final long side of the bunk bed *shall (117)* be open to the room
8.2.	**Closets**	Each bedroom *shall (118)* have an enclosed closet space (enclosed by a door(s)), with a minimum interior length of thirty-two inches (32"), equipped with a shelf and rod running the length of the closet and supported on both ends, and fully compliant with *24 CFR 3280 ("HUD Code").*

8.3.	**Telephone and Cable Television Outlets**	Telephone Outlet ("Jack"): Each unit *shall (119)* have a pre-wired telephone jack installed in each bedroom. The Telephone Jack *shall (120)* be wired for two lines or be a telephone jack with double outlets. Cable Television Outlet ("Jack"): Each unit *shall (121)* have a pre-wired television jack installed in each bedroom and. The telephone and cable jack *shall (122)* be wired to a designated junction box for easy connection by a service provider. Cable and television jacks *shall (123)* be placed so that when the wires are plugged in it does not interfere with the usability of the unit and any safety issues such as trip hazards are avoided. At the same time, they jacks *shall (124)* be placed in a matter that furniture does not have to be moved to access the cable, and telephone jacks.
9.0. Bathroom		
9.1	**Full Bathroom (Non-UFAS)**	The contractor *shall (125)* design and install a full bathroom in all non-UFAS units that meet the following requirements (From 9.1 to 9.1.6) and be only accessible from the common area and not from an individual bedroom.
9.1.1	**Shower and Tub**	The contractor *shall (126)*equip all standard (non-UFAS) manufactured homes with thirty inches by sixty inches (30" x 60") shower / tub with a non-skid surface. The shower / tub *shall (127)* be installed in accordance with the shower / tub manufacturer's instructions, and be leveled so that water drains completely Contractor *shall (128)* install UFAS compliant grabs bar in shower / tub area of all manufactured homes. The manufactured home *shall (129)* include an installed curtain rod Note: UFAS compliant grab bars are required for all units(UFAS/NON UFAS)
9.1.2.	**Commode**	The manufacturer *shall (130)* equip the bathroom with a round or elongated bowl. The commode *shall (131)* be two piece (Tank and bowl are separate) and be an standard height (approx.14-15") . The manufacturer *shall (132)* install UFAS compliant grabs bar in the commode area of all manufactured homes. Note: UFAS compliant grab bars are required for all units(UFAS/NON UFAS)

<table>
<tr><td>9.1.3.</td><td>Bathroom Sink</td><td colspan="2">The manufacturer shall (133) equip the manufactured home with a wall mounted sink. The sink shall (134) include a properly plumbed faucet.</td></tr>
<tr><td>9.1.4.</td><td>Bathroom Medicine Cabinet</td><td colspan="2">The bathroom shall (135) include commercially available surface mounted medicine cabinet. The dimensions of the medicine cabinet shall (136) be roughly 15 ¼ inches by 30 inches. The medicine cabinet shall (137) be installed above the sink. The medicine cabinet shall (138) have a mirrored door. (a Common practice is that the top of the cabinet box (not the door trim) should be approx. 72 inches off the floor)</td></tr>
<tr><td>9.1.5</td><td>Bathroom Lighting</td><td colspan="2">The bathroom lighting shall (139) be ceiling mounted, be wall-switched controlled, have dual bulb sockets, have non-breakable shades, and have two(2) compact fluorescent light (CFL) or Lighting emitting Diode (LED) bulb equivalent to sixty (60) watt bulb (120W Total), each, installed. No glass is permitted except for the bulb itself.
In addition, there shall (140) be light specific to the medicine cabinet and sink.

This lighting shall (141) be supplied either by a light fixture placed over the vanity or a light fixture placed in the ceiling above the medicine cabinet/sink.</td></tr>
<tr><td>9.1.6</td><td>Bathroom Accessories</td><td colspan="2">Other bathroom accessories (including wall mounted toilet paper roll holder and 24 inch towel rack) shall (142) be provided.

All faucet assemblies in the home shall (143) include secondary shutoff valves (one for each the hot and cold water supply).

The bathroom shall (144) have an exhaust ceiling fan.(Refer to Ventilation Section for exhaust fan requirements)</td></tr>
<tr><td rowspan="3">9.2</td><td rowspan="3">Additional Three-Quarters (¾) Bathroom
3 bedroom units only</td><td colspan="2">The ¾ bathroom shall (145) include all items listed in the full bathroom numbers 9.1.2 through 9.1.6

The ¾ bathroom shall (146) not have item numbers 9.1.1 (Shower and Tub). Instead, the contractor shall (147) install a shower. The shower shall (148) have a minimum base of 36” x 36” (threshold). The base of the shower shall (149) be rectangular or squared in shape, and be commercially available (no custom made items).

*In a UFAS three(3) bedroom unit, only the full bath is required to meet UFAS requirements</td></tr>
<tr><td colspan="2">Shower Size Requirements</td></tr>
<tr><td>Shower Size Threshold (Minimum Acceptable)</td><td>Shower Size Objective</td></tr>
</table>

		Shower size threshold thirty six inches by Thirty Six inches (36" x 36")	Shower base where one or both of the dimensions are greater than the threshold
10.0. Unit Hallways			
10.1.	**Hallway Width**	All hallways *shall (150)* be a minimum of thirty-six inches (36") wide. Designers and builders *shall (151)* minimize the overlap of door swings.	
11.0. Electrical			
11.1	**Electrical System**	Electrical systems *shall (152)* be in compliance with the *National Electrical Code, 24 CFR 3280* and be able to supply sufficient and adequate Power to the whole MHU without having breakers tripped and/or fire hazard. All exposed non-current carrying metals parts that may become energized *shall (153)* be bonded to the grounding terminal or enclosure of the distribution panel board. All units *shall (154)* be ready for hook up to municipal electric service The unit electrical service *shall (155)* consist of a 120 / 240 volts 4-wire panel board, complete with master and branch circuit breakers. The distribution panel board *shall (156)* be flush mounted inside the manufactured home in the rear bedroom on the right side of the bedroom (when facing the tongue). The panel board *shall (157)* be of a dead front, safety type, equipped with thermal magnetic molded case circuit breakers of the quick break type having trip indicators and common trip on all multiple breakers. A circuit directory *shall (158)* be permanently affixed to the inside of the circuit breaker access door. All circuits *shall (159)* be clearly and legibly identified. The acceptable amperage *shall (160)* be as defined below.	

	3-bedroom	2-bedroom	One Bedroom	Express Unit 1 Bedroom
Electrical System – AMPS	200 A	150 A (minimum)	150A(minimum)	100 A (minimum)
Electrical System – Volts	120 / 240 V	120 / 240 V	120/240V	120 / 240 V

11.2	**Water Heater Specific Requirements**	The contractor *shall (161)* place the water heater on an individual circuit. This circuit *shall (162)* be clearly marked and the circuit *shall (163)* be taped in the off position. The tape *shall (164)* be labeled: *"Water Heater: Do not turn on until water service is turned on."*
11.3.	**Interior Lighting**	All interior lighting fixtures (except for the water heater compartment) *shall (165)* be ceiling mounted, be wall-switched controlled, have dual bulb sockets, , have non-breakable shades, and have two(2) compact fluorescent light (CFL) or Lighting emitting Diode (LED) bulb equivalent to sixty (60) watt bulb (120W Total), each, installed. No glass is permitted except for the bulb itself. Lighting fixtures *shall (166)* be provided in the living room, kitchen, all bedrooms, bathroom, hallways, and dining area. No glass is permitted.
11.4.	**Service Entrance Junction Box**	Each home *shall (167)* be equipped with a hinged, metal service entrance junction box mounted to a floor joist between the I-beam and the sidewall in such a manner that the distance from the bottom side of the junction box to the floor joist is no more than eight inches (8"). The junction box *shall (168)* be mounted at a sufficient distance from the outer edge and beneath the unit to prevent rainwater penetration (A special rain shield *shall* not be installed.). In addition, the junction box *shall (169)* be located within ten feet (10') of the right rear (when facing the tongue) of the manufactured home. The junction box *shall (170)* be rated NEMA 3 at a minimum and the size of the junction box *shall (171)* be a minimum of 12inx12inx4in**.** The junction box selection *shall (172)*consider all the various angles so that the power cables can be pulled toward the box to get the lug nuts. The service entrance box *shall (173)* be connected to the circuit breaker panel using seal tight electrical conduit. The fittings in the junction box *shall (174)* be appropriate for copper that may be used to connect the junction box to the electrical service. The inlet *shall (175)* be functional, accessible and does not obstruct access to and/or from the door. The conductors *shall (176)* be continuously and appropriately color-coded or coded using colored tape wrapped around both ends of the conductors for a minimum of three inches (3"). Paint is not acceptable for coding wires. The contractor *shall (177)* not use aluminum wire to connect the service entrance box to the circuit breaker panel. The contractor *shall (178)* ensure that the wire used to connect the breaker panel to the service entrance box meets the minimum electrical code(NEC) and/or minimum for the forty-eight (48) contiguous United States and District of Columbia (whichever is stringent)

11.5.	**Service Junction Box for Telephone and Cable**	Each manufactured home *shall (179)* be equipped with a telephone and cable inlet. The junction box *shall (180)* be mounted at a sufficient distance from the outer edge and beneath the unit to prevent rainwater penetration (Note: A special rain shield *shall* not be installed.) In addition, the junction box for telephone and cable *shall (181)* be located within four feet (4') of the right rear (when facing the tongue) of the manufactured home.
12.0. Plumbing		
12.1.	**Plumbing System**	The manufactured home *shall (182)* have at three-quarters inch (3/4") main water supply inlet pipe and *shall (183)* be equipped with a metal, three-quarters inch (3/4") master shutoff valve (gate valve). The manufactured home *shall (184)* be equipped with a frost free faucet (hose bib). The main water supply pipe *shall (185)* be comprised of three-quarters inch (3/4") chlorinated polyvinyl chlorine (CPVC) or Cross-linked polyethylene(PEX) and extend from the water heater compartment to a point not more than six inches (6") below the bottom board of the home. The main water supply *shall (186)* be equipped with a metal, three-quarters inch (3/4") master shutoff gate valve or ball valve. Distribution lines *shall (187)* comply with HUD code. When using CPVC and PEX, then the piping material used may be run directly to the fixture. The bathroom and washer / dryer area *shall (188)* be located within the same area of the home. The contractor *shall (189)* provide access panels in the walls at all points where plumbing joints exist. The access panels *shall (190)* match the wall and finish. An individual shutoff valve *shall (191)* be provided at each installed plumbing fixture except for the tub / shower. All units *shall (192)* be ready to connect up to municipal water or local water well. Note: Water piping *shall (193)* be tested appropriately for the type of piping used. When the manufactured home is delivered to FEMA the entire water system *shall (194)* be dry without any water in it.

12.2.	**Drainage System**	All fixtures *shall (195)* be provided with an adequate drainage system, each fixture connecting to a main sewer line. The main sewer line which *shall (196)* run below the floor and above the bottom board to the place of exit in the rear of the axles. The sewer line *shall (197)* exit the home not less than two feet (2') but not more than three feet (3') behind the rear axle.(It is expected that the manufacturer use a standard location among the different type of units to allow easier connectivity) The exit pipe *shall (198)* protrude at least six inches (6"), but not more than eight inches (8"), from the bottom board, *shall (199)* have a threaded end, and *shall (200)* be capped with a removable plastic cap and chain. The drainage system *shall (201)* be accessible without removing the wheels and/or axles during the installation and deactivation (un-installation) process. The drainage system *shall (202)* meet HUD code All water lines *shall (203)* be installed to a point above the flooring in such a manner that opening of the valves result in the complete drainage of the water lines. The drain valves *shall (204)* be brass. All units *shall (205)* be ready to hook up to municipal sewage or an on-site septic system.

12.3.	**Water Heater / Furnace Compartment**	The manufactured home manufacturer *shall (206)* provide interior access to the water heater. The interior access door *shall (207)* be appropriately sized and located as to allow easy replacement of the water heater. The water heater compartment *shall (208)* be labeled as a hot water compartment. The label *shall (209)* include an admonition that states "No additional items should be stored in the compartment." The compartment *shall (210)* have a single or double light fixture and bulb to allow for maintenance. The light *shall (211)* be equipped with a light switch and *shall (212)* not have a pull string. Access *shall (213)* be provided through a door that is keyed with a single master key. The master key for access to the hot water compartment *shall (214)* be unique and not match any other key used for interior or exterior locks providing access to the manufactured home unless specifically designated. *See requirement for "Water Heater Compartment Standard Key."* The manufacturer *shall (215)* ensure that there is adequate warm air from the interior of the manufactured home into the water heater compartment so that the water heater compartment is maintained at a temperature high enough that water stored in the water heater or flowing through the compartment piping does not freeze. There *shall (216)* not be an exterior door that provides access to the water heater compartment. If the manufactured home is equipped with a split HVAC system, then the air handler and the furnace portion of the HVAC *shall (217)* be placed in the water heater / furnace compartment.
12.4.	**Water Heater**	A 40-gallon electric dual element quick recovery water heater or equivalent (similar performance characteristics) *shall (218)* be installed. The water heater shall (219) be complete with a pressure relief valve, corrosion resistant drain pan, and a metal tank drain valve. The valves and drain pan *shall (220)* be separately piped four inches (4") to six inches (6") below the bottom board of the home and *shall (221)* be at least five inches (5") away from the water inlet pipe. The corrosion resistant water drip collection pan, relief valve, and corrosion resistant drain pan *shall (222)* be separately piped to the exterior. Piping *shall (223)* be installed at the factory. Relief valve *shall (224)* be placed to exterior but pointed down with downward directed outlet to ground. The manufacturer *shall* include a label, sticker or/a placard that indicates what type of piping has been used in the unit. The label *shall* include size, material, and special instructions to winterize the unit. Also, the label, sticker and/or placard shall indicate an appropriate and safe method to winterize and un-winterize the unit.
12.5.	**Plumbing Controls and Faucet Assemblies**	All faucet assemblies in the home *shall (225)* include secondary shutoff valves (one for each the hot and cold water supply). A secondary shutoff valve is not required for the tub/shower assembly. The secondary shutoff *shall (226)* be located in close proximity to the faucet assembly (i.e., under the sink).

13.0. Attic		
13.1.	**Radiant Barrier**	The contractor *shall (227)* install a reflective insulation system in the attic with either a radiant barrier or reflective insulation product as a component. A radiant barrier is made of highly reflective material and may be reinforced with a middle fabric layer making it puncture and tear resistant. Radiant barrier insulation *shall (228)* be energy star compliant: ninety-five to ninety-seven percent (95-97%) of the radiant heat will reflect back to its source when installed properly. Radiant reflective paint [Interior Radiation Control Coatings (IRCC)] is not acceptable. Standard Specifications for Sheet Radiant Barriers for Building Construction Applications *ASTM C1313* ASTM Test Method E84 "Standard Test Method for Surface Burning Characteristics of Building Materials"
14.0. Structural System		
14.1.	**Transportation System and Main Frame**	The main frame of the unit *shall (229)* be a twelve inch (12”) steel I-beam. The contractor *shall (230)* provide and install two (2) additional I-beams of the same material and composition as the main frame *shall (231)* extend a minimum of eighteen inches (18”) on each side of the axle group, with each additional I-beam measuring fourteen feet (14’0”) minimum in length. The additional I-beams *shall (232)* be installed in accordance with DAPIA approved designs and centered over the axle area in such a manner that the main frame I-Beam is doubled forward and aft through the axle area. The frame *shall (233)* be secured to the floor joist system and the frame alignment *shall (234)* be maintained by installing appropriate steel fasteners and lag bolts at every floor joist. The contractor *shall (235)* provide documentation that the manufactured home complies with *24 CFR 3280.903.*
14.2.	**Outriggers**	The contractor *shall (236)* provide and install industry standard tapered outriggers (minimum twelve gauge), preformed C- or Z-type, and twelve (12) gauge outriggers having a base of nine inches (9”) nominal. Outriggers *shall (237)* be installed the entire length of the home at forty-eight inch (48”) on center (o.c.). The outriggers *shall (238)* be mounted to the main frame I-Beam by DAPIA approved on both sides. The outriggers *shall (239)* terminate flush with the perimeter floor joist and be secured at this point with a lag bolt. Additional outriggers *shall (240)* be provided and installed at each location where a shackle (spring hanger) is mounted to the main frame I-Beam. Tolerances *shall (241)* be in compliance with the DAPIA approved designs and specifications.

14.3.	**Front/Rear Cross-Members**	The contractor anufacturer *shall (242)* provide and install front and rear cross-members (aprons). Each cross-member *shall (243)* be the width of the unit and constructed of a minimum twelve inch (12") I-Beam. Each cross-member *shall (244)* be fastened to the front and rear perimeter floor joists, respectively, with a minimum of six (6) lag bolts evenly spaced from corner to corner along the length of the cross-member.
14.4.	**Cross-Members**	The contractor *shall (245)* provide and install cross-members. The cross-members *shall (246)* be installed the entire length of the home, located between the two main frame I-Beams, be forty-eight inches (48") on center, and in accordance with the DAPIA approved designs and specifications.
14.5.	**Connections**	All lag bolts *shall (247)* be at least five-sixteenths of an inch by three inches (5/16" x 3"; acceptable alternative is 9 mm x 76 mm) and be fully threaded. At least one lag bolt *shall (248)* be used to connect each outrigger to the perimeter joist and at least one lag bolt *shall (249)* be used to connect the 1" x 1 1/2" x 12 gauge clip that is welded to each main I-beam and connected to each floor joist at sixteen inches (16") on center.
14.6.	**Coatings**	All exposed surfaces of the entire frame *shall (250)* be completely coated after welding. This coating *shall (251)* be waterproof. The serial number *shall (252)* be painted with rust resistant contrasting color paint, 2 inches (2") tall.
14.7.	**Floor Joists**	The floor joists *shall (253)* be two inches by eight inches (2" x 8") nominal and run transverse to the length of the unit. Floor joists *shall (254)* be spaced sixteen inches (16") on center and splicing of the floor joists is not acceptable. A two inches by eight inches (2" x 8") nominal rim member *shall (255)* be installed to enclose the floor perimeter. The floor joists *shall (256)* be SPF # 2 or better or equivalent. Note: Alternatives methods used *shall* be approved by the DAPIA prior submission.
14.8.	**Floor Decking**	The floor decking *shall (257)* be composed of 3/4" (23/32") minimum thickness material that meets the requirements set forth in 24 CFR 3280.308; panels with joists spacing index of 24 (long edges of the panel *shall (258)* be tongue and groove, and with sixteen inches (16") on center floor joists). The decking should be placed perpendicular to the joist length. If plywood is used, plywood *shall (259)* be installed tongue and groove and secured in such a manner that the wood ends terminate on structural members for proper securing. Floor shall (260) be designed and constructed to resist floor loads to which it may be exposed. Note: If a vendor would like to propose an alternate method, or a different material, the Offeror's would have to refer to CFR 3280.10 for further guidance
14.9.	**Floor and Ceiling**	Floor and ceiling cavities *shall (261)* be insulated with flame retardant insulation and *shall (262)* have a minimum *R* rating of nineteen(R-19) in accordance with *24 CFR 3280.506*. Condensation control (vapor barriers) *shall (263)* be installed in accordance with section *24 CFR 3280.504*.

14.10	**Ceiling Height**	The interior height of the ceiling *shall (264)* be eight feet (8'). The ceiling *shall (265)* have a nominal height between seven feet eleven inches (7' 11") and eight feet one inch (8' 1").
14.11.	**Interior Walls**	A minimum one inch by three inch (1" x 3") bottom plate *shall (266)* be installed at all locations of interior walls. All interior walls studs *shall (267)* be framed (studded) with minimum two inch by three inch (2" x 3") nominal lumber spaced on 16" centers. Interior walls *shall (268)* be secured to a minimum two inch by three inch (2" x 3") top plate. All openings for interior doors and alcoves *shall (269)* be double framed with the same materials as the interior door studs and *shall (270)* have headers/framing member from the top of the door to the ceiling.
14.12.	**Roof Trusses**	Roof trusses *shall (271)* be installed the entire length of the home with a maximum of sixteen inch (16") on centers (o.c.) and each *shall (272)* align with an exterior wall stud. The exterior walls *shall (273)* be connected to the roof trusses with a hurricane strap. The roof trusses *shall (274)* not be cut for the passage of any electrical, plumbing, and/or mechanical system. Exterior roof coverings *shall (275)* be secured to minimum three-eighths inch (3/8") structural rating sheathing. *See Part 3280.305 (HUD Standard, Table of Design Wind Pressures, Footnote 7).*

14.13.	**Exterior Walls**	The exterior wall framing (studs) *shall (276)* be two inches by six inches (2" x 6") nominal installed at a maximum spacing no greater than sixteen inches (16") o.c., and secured to the top and bottom plate. The strapping of the wall studs to roof trusses and perimeter joists *shall (277)* be twenty-six (26) gauge minimum steel straps or brackets at sixteen inches (16") o.c to conform to the requirements of Wind Zone III conforming to 24 CFR 3280.305 (e)(2). The exterior walls *shall (278)* be connected to the roof trusses with a hurricane strap (also known as hurricane clip). The exterior walls *shall (279)* be insulated with flame retardant insulation having a minimum R rating of nineteen (19). Condensation control (vapor barriers) *shall (280)* be installed in accordance with *Part 3280 (HUD Standard) 24 CFR 3280.504*. The insulation *shall (281)* be "batt" wall insulation for this application. Anchoring strap *shall (282)* be secured to each full length wall stud on each side of all double-framed door and window openings. (Straps are not required on jack studs.) All exterior openings such as windows, doors, drain pipes, etc., *shall (283)* be caulked to prevent air and moisture penetration. All exterior penetrations (e.g. doors, windows, vents, exterior lighting, and power outlets) *shall (284)* be equipped with ice and water shields. Ice and water shield is a peel and stick product that adheres directly to the building's surface and forms a water-proof barrier. It is also commonly applied in the valleys of a house as well as around any roof protrusions including; pipe boots, and roof vents. All areas that are the weakest or most prone to leaking *shall (285)* be coated with ice and water shield before installing shingles, or any other roofing products or siding. The manufacturer *shall (286) use* Ice and water shield around exterior penetrations such as doors, windows, vents, exterior lighting, and power outlets to provide extra protection against water intrusion. Ice and water shield is an additional requirement to ensure that water does not penetrate openings in the manufactured homes. The unit *shall (287)* have a minimum 3/8" (11/32") thick structural rated sheathing on all exterior walls. The exterior sheathing is in addition to the building wrap. J-channel installed *shall (288)* not be punctured with weep holes over windows and doors. J-channel joints *shall (289)* not be installed over doors and windows.
14.14.	**House Wrap**	House wraps *shall (290)* be permeable weather barriers which allow air and water to escape from, but not enter, the unit. The house wrap *shall (291)* be installed in accordance with the house wrap manufacturer's instructions. The manufactured home contractor *shall (292)* provide the house wrap installation instructions to FEMA upon request. In addition to house wrap, all exterior penetrations (e.g. doors, windows, vents, lighting, and power outlets) *shall (293)* be equipped with ice and water shields.

14.15.	**HVAC System Air Supply Ductwork (If applicable)**	All warm air supply ductwork *shall (294)* be constructed of metal or insulated fiberglass materials and be complete with joint stays and sealed ends. Closure systems consisting of tapes or mastics, or polymeric mechanical fasteners *shall (295)* be evaluated and meet the requirements of UL 181A and/or UL 181B All seams *shall (296)* be sealed with UL 181A and/or 181B -listed duct mastic tape, which will be verified before acceptance, with mechanical fastening to ensure airtight construction with a maximum three percent (3%) duct loss. No construction debris or sawdust may be left in the duct system. The Contractor *shall (297)* ensure that there are air no leaks
14.16.	**Anchor Straps**	Each home *shall (298)* be equipped with vertical and diagonal straps to meet the requirements of *24 CFR 3280.306*. The anchors *shall (299)* be designed to meet the requirements for an installation from twenty-five inches to forty-eight inches (25" to 48") in height and spaced in accordance with the DAPIA approved installation instructions. Anchor straps *shall (300)* be provided with the manufactured home. All vertical and diagonal tie straps *shall (301)* be coated with zinc or other approved galvanic protection that provides at least .60 ounces per square foot of surface coating on all exposed sides. The anchor straps *shall (302)* not be spliced.
14.1.7	**Structural Insulated Panels(SIP)**	As an alternative of the conventional construction methods, the use of SIP panels in the interior and exterior walls, ceiling and roof is allowed. This requirement may need the home Contractor to request an Alternative Construction letter; the offeror may work with HUD and follow their process to obtain an Alternative Construction Letter. Please refer to 24 CFR 3280.10 for further information. Note: An approved ACL is required at the time of submission of proposal.
15.0. Transport and Transportation System		
15.1.	**Transportation System General**	The transportation system components *shall (303)* be installed with locking nuts or lock washers for every bolt.

15.2.	**Axles**	All units *shall (304)* be equipped new axle assemblies. The DAPIA *shall (305*) be made aware that FEMA may store the manufactured homes for a period of up to four (4) years and that FEMA will be transporting the manufactured homes for distances of up to six-thousand miles (6,000 mi). The Contractor *shall (306)* require the DAPIA to document the choice of the axles and indicate that the axles meet the requirements. The Contractor *shall (307)* specify the number of axles for the Manufactured Homes. The weight supported by each axle *shall (308)* not exceed 80% of the total rated capabilities of the axle. The number of axles *shall (309)* meet the requirements for the States where the Manufactured Home could be deployed. Axles *shall (310)* be rated at the appropriate weight at sixty five miles per hour (65 mph). For all manufactured home types the contractor *shall (311)* ensure and provide documentation that the weight of the manufactured home does not exceed the allowable weight for the number of axles provided. The weight of the manufactured home *shall (312)* be calculated to include all items that are shipped with the manufactured home including all furniture and fixtures as well as any options exercised
15.3.	**Axle Lubrication**	Axles *shall (313)* include grease fittings to facilitate maintenance of the axle hubs and bearings. The grease fittings *shall (314)* be secured from environmental conditions when not being accessed during maintenance. The grease fittings (also known as grease nipples, Zerk fittings, Alemite fittings, Bearing Buddies, and other names) are acceptable as long as their function is similar to fittings that are permanently installed by a threaded connection, leaving a nipple connection that the grease gun attaches to.
15.4.	**Wheel Bearings**	Wheel bearings *shall (315)* meet the minimum requirements of SAE. Wheel bearing capacity *shall (316)* exceed maximum axle load capacity and the tire load capacity. The minimum required operating life *shall (317)* be three-thousand hours (3,000 hrs).

15.5.	**Brakes**	Appropriate number of axles *shall (318)* be equipped with electrically operated brakes to meet 49 CFR Section 393.42. The brakes *shall (319)* meet or exceed the brake performance requirements of FMCSA 49 CFR Section 393.52, in combination with the towing vehicle. For the Express 1-Bedroom units, the brake system *shall (320)* have the capability of meeting the performance requirements of FMCSA 49 CFR 393.43(d) when equipped with a battery. An appropriate battery box and wiring *shall (321)* be built into the unit. The battery *shall* not be included Note: The express unit calls for adding the battery box and wiring in anticipation to meet the braking performance requirements FMCSA 49 CFR 393.43(d).
15.6.	**Springs**	Threshold: Springs *shall (322)* be of the multi-leaf type and appropriately rated with an over the axle mounting assembly (shackles, bolts, bushings, etc.). Shackles *shall (323)* be secured to the main frame I-beams by continuous weld. Optional: The Contractor has the option to utilize a torsion bar suspension. This option could require an ACL.
15.7.	**Tires and Rims**	All tires and rims *shall (324*) be new and free of defects. The Contractor *shall (325)* specify the tires and rims to meet or exceed the minimum US DOT requirements of FMVSS 571.110 for trailers of 10,000 lbs or less or 571.120 for trailers more than 10,000 lbs. Rim clamps, bolts, nuts or other related tire-mounting hardware *shall (326)* be new. All rims *shall* be the same color
15.8.	**Drawbar**	The drawbar *shall (327)* be three feet to four feet (3'-4') and be welded not bolted. The drawbar ("A" frame) *shall (328)* be installed in such a manner that it is centered for proper towing and is secured by continuous weld to two (2) points on the front cross-member and two (2) points on the main frame I-beam. A cross-member of the same material as the drawbar *shall (329)* be secured to the inside of the drawbar by continuous weld. The cross-member *shall (330)* be located midway between the coupler hitch and the buck plates. An additional cross-member *shall (331)* be installed and secured by continuous weld inside the drawbar at the point where the drawbar legs are welded to the main frame I-beam. All welds on the drawbar *shall (332)* be primed and painted with rust preventative paint to ensure that the welds are protected from the elements.
15.9	**Screw Jack**	The screw jack *shall (333)* be the industry standard bolt in type and capable of supporting 120% the calculated weight that is going to be transferred to the screw jack. Also, it *shall (334)* have galvanized protection coating with at least .30 ounces/sq-ft.

15.10	**Transportation Lighting**	1-Bedroom Express units *shall (335*) be equipped with permanent lighting per USDOT NHTSA FMVSS 571.108. Please refer to USDOT NHTSA FMVSS 571.108. (Federal Lighting Equipment Location Requirements can be found at: http://www.nhtsa.gov/cars/rules/standards/conspicuity/trlrpstr.html) 2 and 3-Bedroom units *shall (336)* be transported with lighting compliant with FMCSA 49 CFR Section 393.17.
16.0. Exterior Covering		
16.1.	**Exterior Siding Covering**	Unit siding *shall (337)* be the Contractor's standard Vinyl siding or similar (color: light grey) in accordance with *24 CFR 3280.307*. Siding and corners *shall (338)* be the same color. Soffits, trim and J-block *shall (339)* either be the same color, or white. J-channel *shall (340)* not be punctured with weep holes or joints over windows and doors. The exterior siding *shall (341) be* installed in accordance to manufacturer instructions.
16.2.	**Window Shutters**	The manufactured home *shall (342)* not have window shutters
16.3.	**Roof Covering**	All roof assemblies *shall (343)* include non-rust drip edge. Drip edges *shall (344)* not have joints over the doors or windows. The roof *shall (345)* be installed within the manufacturer's standard and constructed with adequate ventilation. All roof penetrations (e.g. vents) *shall (346)* be equipped with ice and water shields. An ice and water shield, consisting of at least two layers of underlayment cemented together or a self-adhering polymer modified bitumen sheet, *shall (347)* be provided and extend from the lowest edges of all roof surfaces to at least twenty-four inches (24") beyond the exterior wall. The roof *shall (348)* have a shingle roof covering to resist the loads indicated in the Table of Design Wind Pressures in *24 CFR 3280.305*. The Roof *shall (349)* have a Light or white colored composition shingle with a minimum solar reflectance equal to or greater than Energy Star specifications for roof products. All roof penetrations *shall (350)* be capped with a galvanized metal cap. The galvanized metal caps *shall (351)* be primed and painted, so as to prevent rust. The color should match the exterior roof color. Rubber grommets *shall (352)* not be used. Roof *shall (353)* have shape, materials and details that do not allow the entry of water into the unit.

16.4	**Access/Egress water protection**	The Contractor *shall (354)* provide a mean to minimize water flowing from the roof of the manufactured home into the access/egress doorway area. This requirement can be met using a permanently installed solution or a solution that can be installed at the time when the manufacturing home is installed. If it is a non-permanent solution and it *shall (355)* be properly packed and secured so it does not damage the Manufactured Home during transportation. The Solution *shall (356)* be selected so that tools used for the installation *shall (357)* be Standard tools typically used to install a manufactured home
16.5.	**Bottom Board**	The Bottom board of the home *shall (358)* be secured under the entire home, moisture resistant, so as to prevent rodents from entering the unit. The underside of the home *shall (359)* be enclosed and meet 24 CFR 3280.305(g)(6). Plastic materials *shall (360) be a* minimum of twenty (20) mil thickness. Allowance to install cross tie anchoring buckles *shall (361)* be made Allowance to install cross tie anchoring buckles *shall (362)* be made Multiple layers of acceptable material [24 CFR 3280.305(g)(6)] could be used to meet the twenty (20) mil thickness requirement.
16.5.	**Bottom Board Tire Blowout / Road Hazard Damage Mitigation**	The contractor *shall (363)* install wooden board or other material that *shall (364)* deflect or prevent material from tire blowouts from damaging the "Bottom Board" or other items above the tires. The material *shall (365)* be of a type that *shall (366)* endure multiple manufactured home transportation, storage, and installation/deactivation cycles without rotting or rusting.
17.0. Interior Covering		
17.1.	**Paint**	The manufactured home *shall (367)* have an off-white interior color with semi-gloss finish. Walls *shall (368)* be primed prior to painting unless the surface is painted using a combination of primer coat and a minimum of two coats of /paint. Walls, molding, and trim paint *shall (369)* be antimicrobial low volatile organic compound(VOC)

17.2.	**Walls**	*Shall (370)* be constructed using moisture / mold resistant materials. All panels *shall (371)* begin and terminate on wall studs. All panel joints *shall (372)* be made flush as possible and covered with adequate joint compounds or molding strips. All panels *shall (373)* be secured to each wall stud it comes in contact with. All outside corners *shall (374)* be reinforced with corner guards, either metal(non-corrosive) that is free of burrs or sharp points or edges and are covered by adequate joint compound, or wood molding so that the corner is protected. Batten strips are not acceptable for dry wall / sheet rock joints. All joints, except when using molding strips, *shall (375)* have a Level 3 finish, as specified in Gypsum Association, GA-214 "Recommended Levels of Gypsum Board Finish", prior to priming
17.3.	**Molding and Trim**	All trim molding used in the home *shall (376)* be color matched or color coordinated to the interior paneling. All seals, joints, door and window frames, corners (in plain view or not), etc., *shall (377)* be finished with appropriate matching moldings. All exposed panel edges, such as access panels, *shall (378)* be covered with permanently attached non-plastic edging.
17.4.	**Joint Caulking**	Prior to delivery, the Contractor *shall (379)* ensure that all joints (between trim and walls, molding and walls, molding and floors, etc.) *shall (380)* be sealed and caulked with appropriate caulking material to ensure that there is a tight seal.
17.5.	**Ceiling Panels**	The Contractor *shall (381)* construct the manufactured home ceiling using industry standard methods.
17.6.	**Floor Covering**	All interior floor covering *shall (382)* be durable and low maintenance, be continuous roll without seams, resilient, and non-skid floor covering. Carpet is not acceptable anywhere in the home with the following exception. A mat approximately thirty inches by fifteen inches (30” x 15”) *shall (383)* be placed at each entrance as a door mat. If heat duct are installed in the floor, openings *shall (384)* be covered with a four inch by ten inch (4" x 10”) minimum, metal, adjustable louvered covering (register).
18.0. Heating/Air Conditioning/Ventilation		

18.1	**HVAC Systems**	FEMA HVAC systems *shall (385)* be one of the following: **Central Air Conditioner/Split System** The installation of a central air condition unit requires duct work and pipe work. **Packaged Unit** Unlike the split system, the packaged unit has all the components of the air conditioning system all in one place. The unit itself requires duct work, power line and drain piping. **Mini Split / Ductless Split** The split systems have an exterior condenser and an indoor evaporator unit that houses the cooling coil, a fan, controls to which you can add indoor blowers. Some models are designed to have more than one evaporators connected to the condenser unit. Each evaporator blower is mounted high on a wall inside the unit/room you want to cool. HVAC systems *shall (386*) not transmit mechanical energy, potential and kinetic energy(i.e. Vibration), to the chassis of the MH that would lead to generate sounds and/or vibrations that will affect the comfort of the occupants The Contractor can utilize different methods to absorb and/or dissipate the effects of the mechanical energy
18.2.	**HVAC Geographic Area**	Manufactured Homes HVAC systems *shall (387)* be selected/designed/installed according to the thermal zone that the unit is going to be built or *shall (388)* be able to accommodate all zones in the US. The Contractor *shall (389)* meet HUD code. The unit *shall (390)* obtain a *3280.510 Heat loss certificate and/or a 3280.511 Comfort cooling certificate* and information as required by HUD code

<table>
<tr><td>18.3.</td><td>Furnace</td><td colspan="4">The unit shall (391) be equipped with at least a ninety-five percent (95%) efficient electric furnace (central heating system) capable of maintaining an average of seventy degrees Fahrenheit (70°F) temperature in the manufactured home. The furnace shall (392) be able to maintain the temperature based on the coldest average temperature of the operating area of the manufactured home.

The electric furnace (central heating system) shall (393) operate according to 24 CFR 3280.510. The furnace shall (394) also be built or equipped for the installation of a split type air conditioner and have enclosed space in water heater/furnace compartment ,for an A-coil evaporator unit, and with a 4-wire thermostat connects connections completely wired and installed.

Each furnace shall (395) have instructions attached to the furnace. The furnace shall (396) be complete with a factory-supplied base suitable for a forced air duct distribution system.

The HVAC (furnace and air conditioning) unit can be a packaged unit or split units as long as the HVAC including the air conditioning condenser does not cause vibration within the manufactured home (See air condition installation requirements.)

If the HVAC system has a separate furnace / air conditioning condenser, the furnace / air handling unit shall (397) be enclosed in the water heater / furnace compartment.

This FEMA requirement may need the contractor to request an Alternative Construction letter from HUD; the vendor may work with HUD and follow their process to obtain an Alternative Construction Letter.

Note: An approved ACL is required at the time of submission of proposal.</td></tr>
<tr><td></td><td></td><td>3-Bedroom</td><td>2-Bedroom</td><td>1 Bedroom</td><td>Express 1-Bedroom</td></tr>
<tr><td></td><td></td><td>The output shall (398) not be less than forty-thousand (40,000) BTU and in accordance with Subpart F of 24 CFR 3280 and Subpart H of 24 CFR 3280.</td><td>The contractor shall (399) specify the output for the 2-Bedroom units. The HVAC shall (400) be designed and built in accordance with Subpart F of 24 CFR 3280 and Subpart H of 24 CFR 3280.</td><td>The contractor shall (401) specify the output for the 1-Bedroom units. The HVAC shall (402) be designed and built in accordance with Subpart F of 24 CFR 3280 and Subpart H of 24 CFR 3280.</td><td>The contractor shall (403) specify the output for the express-Bedroom units. The HVAC shall (404) be designed and built in accordance with Subpart F of 24 CFR 3280 and Subpart H of 24 CFR 3280.</td></tr>
</table>

18.4.	**Air Conditioner**	The manufactured home *shall (405)* be equipped with a specifically engineered Heating, Ventilation and Air Conditioning (HVAC) system based on the size and intended use of the manufactured home, in accordance with *ACCA Manual J requirements*, that is compatible with the furnace and unit size. The contractor *shall (406)* provide FEMA with **documentation, engineering calculations and specifications upon request.** The Air Conditioner *shall (407)* be able to maintain an average of seventy-five degrees Fahrenheit (75°F) temperature in the manufactured home and obtain HUD required certificate (§ 3280.511 Comfort cooling certificate) Supply Ducts: If applicable, Supply ducts *shall (408)* be located in the ceiling. Thermostat: The thermostat *shall (409)* be a digital readout with automatic settings from heat / cool. Note: This FEMA requirement may need the home contractor to request an Alternative Construction letter from HUD.
18.5.	**HVAC Damper**	The HVAC system *shall (410)* be equipped with a damper that *shall (411)* allow for the adjustment of the mixture of fresh air entering the manufactured home through the HVAC system. The damper *shall (412)* be designed in such a way that a technician will be needed to adjust the damper setting. The damper *shall (413)*be set to meet the *24 CFR 3280.103(b)* requirements for whole This requirement does not apply for Mini Split Systems; however 24 *CFR 3280.103(b)* requirements *shall* be met.
18.6	**Dehumidifier (If Required)**	If a Dehumidifier is required to meet specific thermal Zone requirements, the Dehumidifier *shall (414)* be located in the Water Heater Closet and *shall (415)* be connected to the sanitary sewer system. Note: The Offeror will have to determine if a Dehumidifier is required or not to meet 32 CFR 3280(HUD code).

18.7.	**HVAC Installation**	The HVAC system *shall* (*416)* be completely installed at the production facility. This includes duct work, installation manual, and any other materials needed for the installation. The HVAC *shall (417)* be provided with the manufactured home. The HVAC *shall (418)* be the type that is installed on the short side of the home. The HVAC unit *shall (419)* not require additional installation when the manufactured home is installed. If the contractor provides a split /mini split HVAC system with the air condition condenser mounted on the draw bar or extension of the frame at the rear of the home. The compressor *shall (420)* be mounted in such a way as to dampen the vibrations and any sound that accompany condenser operation cycles. The mounted compressor *shall (421)* be attached in such a way that the there are no sharp edges or protrusions and the condenser *shall (422)* not be damaged in any way during transportation or use. If the compressor is mounted on the draw bar side of the manufactured home the compressor *shall (423)* be protected from damage when transported/moved. The HVAC unit condenser *shall (424)* not produce any unwanted sound that disturbs the sleep and comfort of the occupants. If FEMA does not exercise the option to shrink wrap the entire manufactured home the contractor *shall (425)* install a weatherproof covering on the external mounted portion of the HVAC that *shall (426)* prevent water penetration during transportation and storage of the manufactured home. The HVAC cover *shall (427)* be designed for one time use, however, the manufactured home may be in storage for up to five (5) years and the cover *shall (428)* protect the HVAC for the entire time that it is in storage and being transported to the initial installation point. The cover *shall (429)* be installed in such a way as to not cause damage to the HVAC or the manufactured home's siding during storage or removal of the cover. This *shall (430)* include leaving residue after tape is removed. This FEMA requirement may need the home contractor to request an Alternative Construction letter from HUD.
18.8.	**Ventilation**	Each bathroom exhaust fan *shall (431)* be adequately rated for the size (square footage) of the bathroom, however, at a minimum *shall (432)* exhaust no less than seventy-five (75) CFM. Bathroom exhaust fan *shall (433)* be directly vented to the outside. The ventilation fan in the bathroom *shall (434)* be equipped with a timer that allows the fan to operate for a minimum of sixty (60) minutes prior to turning the fan off. Kitchen exhaust fan *shall (435)* exhaust a minimum of one-hundred (100) CFM, directly vented to the outside.
19.0. Fixtures and Receptacles		

19.1.	**Exterior Fixtures**	The contractor *shall (436)* equip the MHU with a "UL" approved weatherproof exterior lighting fixture and associated wiring *shall (437)* be provided at each exterior entrance/exit door. Fixtures *shall (438)* not be installed where rotation of bulbs would block exterior door exits. An interior wall switch *shall (439)* be installed near the exterior entrance/exit door the light serves. The fixture *shall (440)* be a metal, 150-degree motion-sensing twin flood security light. The color *shall (441)* be light grey or white. The motion sensing light *shall (442)* be installed so that it has a manual override feature. Fixture *shall (443)* be Energy Star. Appropriate flood light bulbs *shall (444)* be provided in a secure location in the kitchen. All exterior penetrations (e.g. lighting and power outlets) *shall (445)* be properly sealed and caulked with proper material and equipped with ice and water shields.
19.2	**Interior Receptacles**	Electrical receptacles *shall (446)* be installed at convenient locations throughout the unit. All electrical outlets *shall (447)* be eighteen inches (18") about the finished floor. All Switches and thermostat *shall (448)* set forty-eighth inches (48") above the finished floor. Electrical receptacles *shall (449)* be installed in accordance with industry standard except that self-contained devices are not permitted. Receptacles near wet areas *shall (450)* be protected with a ground fault circuit Interrupter (GFCI)The contractor *shall (451)* install a minimum of four (4) GFCI protected receptacles in the kitchen above the counter. The receptacle for the range *shall (452)* be flush mounted in the wall to the rear appliance. The receptacle for the refrigerator *shall (453)* be located so it can be unplugged without moving the refrigerator. The unit *shall (454)* equipped with a side by side electric washer and dryer hookup Each bedroom *shall (455)* have a receptacle on each wall
19.3.	**Exterior Receptacles (Heat Tape)**	Each home *shall (456)* be provided with a single outlet heat tape receptacle with a weatherproof case, located under the unit and within two feet (2') of the water pipe inlet. The exterior receptacle for the heat tape *shall (457)* not be a ground fault circuit interrupter (GFCI). *[24 CFR 3280.604(b)(4)(ii)]*

		<u>For FEMA "Northern Units" and "CONUS" only:</u> In addition to the outlet as described above, all Northern and "CONUS" units *shall (458)* have one (1) weatherproof outdoor duplex receptacle that *shall (459)* also be located under the unit and within two feet (2') of the water pipe inlet. With the single receptacle for heat tape and the additional duplex receptacle, no less than three (3) duplex outlets *shall (460)* be available under the unit and within two feet (2') of the water pipe inlet. These additional receptacles *shall (461)* be installed without ground fault circuit interrupter *[24 CFR 3280.604(b) (4) (ii)]* so that they can be used for additional water connection heat tape. The additional duplex outlet *shall (462)* be placed on the underside of the manufactured home and not be placed on the side of the home, where it would be accessible and be used when the manufactured home is skirted. This FEMA requirement may need the home contractor to request an Alternative Construction letter from HUD.
19.4.	**Weatherproof Outdoor Duplex Receptacle**	One (1) weatherproof outdoor duplex receptacle *shall (463)* be flush mounted on the exterior wall of the home, approximately five feet (5') forward of the water inlet and approximately six inches (6") up from the floor level.
20.0. Safety Equipment		
20.1.	**Smoke Alarms**	Smoke alarms *shall (464)* be installed as specified in 24 CFR§ 3280.208 Smoke alarm requirements Each unit *shall (465)* have interconnected smoke alarms that utilize the electrical system of the home as the primary power source (with battery back-up included). Smoke alarms *shall (466)* follow NFPA recommendations without affecting compliance with the 24 CFR§ 3280.208 Smoke alarm requirements and/or the Rugged Base Requirements. Smoke alarms *shall (467)* be equipped with push-button testing and temporary silencing devices. Provide a smoke detector in each bedroom and in the living room / dining / kitchen area. Each smoke alarm *shall (468)* be equipped with a strobe component as visual signal of smoke or fire.
20.2.	**Fire Extinguisher**	Each manufactured home *shall (469)* be equipped with a five pound (5 lb) A-B-C type fire extinguisher and a mounting bracket. The mounting bracket *shall (470)* be secured to a wall stud in the kitchen / living area. The location of the extinguisher *shall (471)* follow NFPA recommendations.

20.3.	**NOAA Weather Radios**	Each manufactured home *shall (472)* be equipped with NOAA weather radio in each bedroom and *shall (473)* be equipped with a strobe component. NOAA weather radios *shall (474)* be approved by *Federal Communications Commission (FCC) and National Oceanic and Atmospheric Administration (NOAA).* All weather radios *shall (475)* work with electrical power and battery backup All weather radios *shall (476)* be UFAS compliant
21.0. Access System (Doors)		
21.1.	**Exterior Door**	Each exterior door *shall (477)* be an industry standard thirty-six by seventy-six (36" x 76") minimum insulated fiberglass or steel door with a minimum R 3.5 rated insulation. Each door *shall (478)* be pre-hung and the bottom of the door's threshold *shall (479)* be even with the adjacent floor and providing a weather-proof seal. Each entrance door *shall (480)* have passage locks and key operated dead bolt locks installed. All key operated dead bolt locks *shall (481)* use a dedicated key that operates the front and rear Exterior Doors. All locks *shall (482)* be master keyed. When facing the unit from the drawbar the front door *shall (483)* be on the left side and the rear door *shall (484)* be on the right side near the back. The doors *shall (485)* not be on the same side. The doors *shall (486)* be mounted in such a manner that the hinged side is toward the front of the unit (toward the tongue). When fully opened (the maximum extent of the door swing), the door *shall (487)* not block or come in contact with any window. The door *shall (488)* have lever handles. The door on the left side of the manufactured home *shall (489)* be designated as the front door. The front door *shall (490)* swing outward from the manufactured home. The door on the right side of the manufactured home *shall (491)* be designated as the rear door. The rear door *shall (492)* swing out-ward from the manufactured home. *Shall (493)* and *(494)* are reserved for future use. The manufactured home *shall (495)* not have any screen doors**.**
21.2.	**Exterior Door Peephole / Door Viewer**	Each exterior door *shall (496)* have two (2) peephole / door viewers. The upper peephole *shall (497)* be located in the horizontal center of the door, and be placed five feet three inches (5'3", or 63") with a tolerance of (± .5 inch) from the finished floor. The lower peephole *shall (498)* be located in the horizontal center of the door, and be placed three feet seven inches (3'7", or 43") with a tolerance of (± .5 inch) from the finished floor.

21.3.	**Interior Doors**	All interior passage doors *shall (499)* be a minimum of thirty-two inches (32") clear width when the door is open in a ninety degree (90°) position. The threshold of the doorway should be even with the adjacent floor. Closet doors do not have to have a thirty-two inch (32") clear width. No interior doors *shall (500)* be short (under) cut (reduced beyond the frame) for any reason except to allow for the door to open and close, to include facilitating air circulation. Interior doors *shall (501)* have a floor to door clearance of between a half-inch and a quarter-inch (½" - ¾"). Air circulation *shall (502)* be accomplished by providing vents either in the door or through the walls. All interior doors *shall (503)* have lever handles Door Stops *shall (504)* be ins doors to prevent doors from opening too far and damaging nearby walls. Door stops *shall* match the interior hardware.
22.0. Windows		
22.1.	**Windows and Egress Windows**	The minimum window size *shall (505)* be approximately thirty inches by fifty-four inches (30" x 54") with a maximum U factor 0.36. The windows *shall (506)* be vinyl, low E glass, and double paned. All windows *shall (507)* have window screens. An exception to the minimum window size is that a thirty inch by twenty-seven inch (30" x 27") window may be used over the kitchen sink. Windows used as egress windows *shall (508)* be listed and labeled for use as an egress window with operating instructions affixed to each window. Screens *shall (509)* be held in place during transit with a removable, reusable, non-corrosive, shipping clip(s). Tape or other temporary securing methods *shall (510)* not be utilized to secure screens. All windows, when closed, should include an opaque shade or other mans to provide privacy. At least one exterior door *shall (511)* have a clear opening width of no less than 32 inches
22.2.	**Window Blinds**	All windows *shall (512)* have mini-blinds installed. These mini-blinds *shall (513)* be designed to meet required industry safety standards and *Consumer Product Safety Commission recommendations*.

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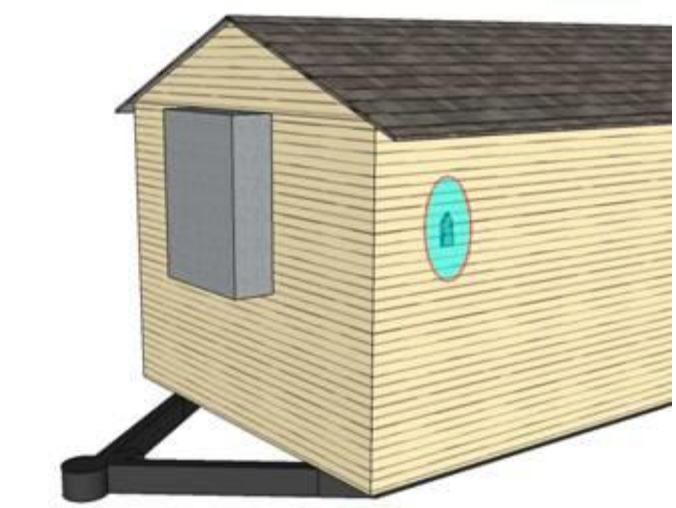
22.3	**Transponder location**	The contractor *shall (514)* provide a location (transponder sled) to mount a transponder which dimensions are, L: 7.25in x W: 3.25in x H: 1in (184mm x 83mm x 25 mm) and weighs 13 ounces (369 g) (without mounting bracket) or 7.61 x 3.52 x 1.06in (192.42mm x 89.82mm x 26.9mm) with a mounting bracket. The transponder mounting (transponder sled) location *shall (515)* not impact the functionality and performance of the transponder, damage the MH and/or the transponder under any circumstance. The transponder location *shall (516)* be accessible, easy to reach and *shall (517)* allow removing the transponder without any special tool/property tool (a tool designed or reserved for a particular purpose) without damaging the MH, the surface mounted, and/or the transponder. The transponder *shall (518)* be located as highest as possible with the top position of the transponder pointing to the sky (up position). There *shall (519)* not be any object obstructing the signal that is emitted and/or received from the satellites.  FEMA worked with the Transponder manufacturer and provided the following location for the contractors. The contractor *shall* meet shall’s 514 to 519. 

23.0. UFAS Requirements		
All units designated as "UFAS" or "Accessible" *shall (520)* be fully compliant with applicable UFAS regulations and this document. UFAS "reminders" included throughout these requirements are used to highlight certain standards, but are not all-inclusive, and the contractor *shall (521)* be responsible for ensuring compliance for applicable UFAS regulations. FEMA has provided specific areas where past units designs have been lacking; however contractors are responsible for UFAS products being fully compliant with applicable PARTS of UFAS regulations.		
23.1	**Accessible Route**	An Accessible route as specified in UFAS 4.3 *shall (522)* be provided within the unit and *shall (523)* connect an accessible entrance with all accessible rooms, spaces, and accessible elements of the unit. Other specific spatial requirements such as clear floor space and wheelchair turning space are noted below in the requirements for the Accessible/UFAS units.
23.2. Additional Requirements for UFAS unit: Living Rooms		
23.2.1 .	**Telephone and cable Television Outlets**	Cable television and telephone jacks *shall (524)* be in compliance with UFAS 4.27 for controls and operating mechanisms. The telephone jacks *shall (525)* have unobstructed access and be located on the accessible route.
23.2.2	**Living Room Furniture**	The living room *shall (526)* contain compliant turning space in accordance with UFAS 4.2.3 and 4.3 when the furniture is set up and positioned for manufactured home occupancy.
23.3. Additional Requirements for UFAS unit: Kitchen/Dining Room		
23.3.1	**Furnishing**	The dinette table *shall (527)* be movable on wheels or casters. The table in the UFAS manufactured home may be used as the UFAS accessible counter space in the kitchen and *shall (528)* comply with UFAS 4.32.
23.3.2	**Cabinetry**	Cabinets *shall (529)* comply with UFAS 4.1, 4.34, and UFAS 4.25. All cabinet doors and drawers *shall (530)* be compliant with 4.27.
23.3.3	**Kitchen Counter Tops**	Countertops *shall (531)* comply with UFAS 4.32 and UFAS 4.34.6. Switches and electrical receptacles or other controls on walls over kitchen counters *shall (532)* be within the reach ranges specified in UFAS 4.2.6 for an obstructed reach.
23.3.4	**Kitchen Sink**	The kitchen sink *shall (533)* comply with UFAS 4.24.
23.3.5	**Appliances**	Each kitchen appliance *shall (534)* have a clear floor space for a forward or parallel approach complying with UFAS 4.34.6.2. Appliance controls *shall (535)* be in compliance with UFAS 4.34.6.3 and UFAS 4.27.

23.3.6	**Range / Oven**	Locate controls for range burners and oven to avoid reaching across burners. The range/oven *shall (536)* be in compliance with UFAS 4.34.6.6 and UFAS 4.34.6.3
23.3.7	**Power Vented Hood**	Power vent *shall (537)* have a switch to operate vent in compliance with UFAS 4.27.
23.3.8	**Refrigerator**	The refrigerator *shall (538)* be in compliance with UFAS 4.34.6.8.
23.3.9	**Microwave Oven**	Each unit *shall (539)* have a minimum 1.2 c.f. microwave with child lock unless this requirement is met through the use of a combination microwave / hood / fan / light and be UFAS compliant.
23.3.10	**Washer and Dryer Hook-up**	A clear floor space in compliance with 4.34.6.2 *shall (540)* be provided at the washer/dryer location. Where a washer and dryer are provided as part of the unit they *shall (541)* comply with UFAS 4.34.7. and UFAS 4.27.
23.3.11	**Turning Space**	The kitchen/dining room *shall (542)* contain a turning space complying with UFAS 4.2.3.
23.3.12	**Telephone and cable Television Outlets**	Cable television and telephone jacks *shall (543)* be in compliance with UFAS 4.27 for controls and operating mechanisms. The telephone jacks *shall (544)* have unobstructed access and be located on the accessible route. The cable outlet *shall (545)* have unobstructed access and be located on the accessible route.
23.4 Additional requirements for UFAS Unit: Bedrooms		
23.4.1	**Furnishing**	**UFAS-**In the bedroom/s: • One of the short sides of the bed *shall (546)* be designated as the head of the bed and that short side *shall (547)* be placed against a wall • Of the three remaining sides two *shall (548)* have a minimum of twelve inches (12”) between the bed and the nearest wall The final side of the bed (one of the long edges) *shall (549)* have open access of thirty-six inches (36”) from the nearest wall
23.4.2	**Closets**	**UFAS-**Closets *shall (550)* be on an accessible route and *shall (551)* be in compliance with UFAS 4.34.2(8) and 4.25.

23.4.3	**Telephone and cable Television Outlets**	**UFAS –** Cable television and telephone jacks *shall (552)* be in compliance with UFAS 4.27 for controls and operating mechanisms. The telephone jacks *shall (553)* have unobstructed access and be located on the accessible route. The cable outlet *shall (554)* l have unobstructed access and be located on the accessible route.
23.4.4	**Turning Space**	The bedrooms *shall (555)* contain a turning space complying with UFAS 4.2.3.
23.5. Additional Requirements for UFAS Unit: Bathroom		
23.5.1	**Shower and Tub**	UFAS units *shall (556)* be equipped with; an accessible bathtub, a 36" x 36" transfer shower, or a roll in shower (30" x 60" minimum), with no threshold or curve. The contractor *shall (557)* install a shower / bathtub combination complying with UFAS 4.20 bathtubs; or a shower stall complying with UFAS 4.21. Grab bar *shall (558)* be provided and *shall (559)* comply with either 4.20.4 where bathtubs are provided or with 4.21.4 where showers are provided. The contractor *shall (560)* insure that the UFAS shower does not allow water to flow out from the base if a roll in shower is used properly. This may include the use of a compressible rubberized "bumper" to act as a water dam. The "bumper" *shall (561)* comply with UFAS 4.5.2 when compressed. The shower *shall (562)* be installed in accordance with the shower manufacturer's instructions. The manufactured home *shall (563)* include a curtain rod. UFAS showers and tubs are subject to alternative construction approval. These requirement varies from *24 CFR 3280.607(b) (3).*
23.5.2	**Commode**	The water closet (toilet) *shall (564)* comply with UFAS 4.34.5.2.
23.5.3	**Bathroom Lavatory**	The vanity counter and lavatory *shall (565)* comply with UFAS 4.19. Lavatories, (sinks) and their countertops *shall (566)* be wall-supported.
23.5.4	**Cabinetry/ Lighting and Accessories**	At least one shelf of the medicine cabinet *shall (567)* comply with UFAS 4.25. The toilet paper dispenser *shall (568)* comply with 4.34.5.2(4).
23.5.5	**Accessible/ UFAS Units**	The bathroom *shall (569)* contain a turning space complying with UFAS 4.2.3. Plumbing controls, including faucet assemblies and shower spray units *shall (570)* comply with relevant provisions of UFAS 4.16 to 4.24 and 4.27.

23.6. Additional Requirements for UFAS unit: Hallways		
23.6.1	**UFAS: Hallway Width & Door Openings**	All hallways *shall (571)* be a minimum of thirty-six inches (36") wide. All hallways *shall (572)* be UFAS compliant and all interior doors *shall (573)* provide a thirty-two inches (32") clear opening and comply with UFAS 4.13. The door maneuvering clearances requirements in UFAS 4.13.6 may require hallways to be wider than 36 inches at some doorways.
23.7. Additional Requirements for UFAS unit: Electrical		
23.7.1	**Interior Lighting**	All light switches *shall* (*574*) be compliant with UFAS 4.27. Where receptacles or switches are above obstructions, including countertops, they *shall (575)* be located a maximum of forty-four inches (44") above the finished floor and *shall (576)* meet the requirements for an obstructed side reach in UFAS 4.2.6.
23.8. Additional Requirements for UFAS unit: Plumbing		
23.8.1	**Plumbing Controls and Faucet Assemblies**	Plumbing controls, including faucet assemblies and shower spray units *shall (577)* comply with relevant provisions of UFAS 4.16 to 4.24 and 4.27.
23.9. Additional Requirements for UFAS unit: Accessible/Controls		
23.9.1	**Controls and Operating Mechanisms**	All controls *shall (578)* comply with UFAS 4.1 and UFAS 4.27. Switches and electrical receptacles or other controls on walls over kitchen counters *shall (579)* be within the reach ranges specified in UFAS 4.2.6 for an obstructed reach. Controls include but are not limited to: cable television and telephone jacks, electrical receptacles, thermostats, and light and fan switches.
23.10. Additional Requirements for UFAS unit: Interior Floor Coverings		
23.10.1.	**Floor Covering**	Floor surfaces *shall (580)* meet UFAS 4.5. The mat provided at each entrance *shall (581)* comply with UFAS 4.5.3**.**
23.11. Additional Requirements for UFAS unit: Fixtures and Receptacles		
23.11.1.	**Interior Receptacles**	All receptacles *shall (582)* meet UFAS requirements
23.12. Additional Requirements for UFAS unit: Safety Equipment		
23.12.1	**Fire Extinguisher**	A fire extinguisher mounted on the wall *shall (583)* not protrude more than 4" from the wall surface if the bottom is more than 27 inches the floor. The top of the fire extinguisher *shall (584)* be at a maximum of 48 inches above the floor.

23.13 Additional Requirements for UFAS unit : NOAA Weather Radios		
23.13.1	**NOAA Weather Radios**	ALL NOAA weather radios *shall (585)* be compliant with UFAS 4.1 and UFAS 4.28.
23.14 Additional Requirements for UFAS unit: Access System (Doors)		
23.14.1	**Interior Doors**	The interior doors *shall (586)* comply with UFAS 4.13. Interior doors *shall (587)* have lever hardware that allows to be operable with only one hand and *shall (588)* not require tight gasping, pinching, or twisting of the wrist and *shall (589)* comply with UFAS 4.27 Where pocket doors are provided in accessible units, the lever hardware on both sides of door *shall (590)* extend two inches (2") from door surface, *shall (591)* have one and one-half inch (1.5") clearance on each side of handle, and *shall (592)* be compliant with UFAS 4.34, UFAS 4.27 and UFAS 4.13.
24.0 . Manufactured Home Keys		
24.1.	**Unit Keys**	The contractor *shall (593)* furnish three (3) sets of keys for homes procured. Keys *shall (594)* be secured on a rust-proof ring or wire. The unit keys *shall (595)* have an identification tag with the manufactured home serial / VIN number on one side and space for the bar code on the other side. The contractor *shall (596)* furnish three (3) sets of keys for each lock, if different, for each manufactured home procured. Keys shall (597) be secured on a rust-proof ring or wire. The unit keys *shall (598)* have an identification tag with the manufactured home serial / VIN number on one side and space for the bar code on the other side.
24.2.	**Water Heater Compartment Standard Key**	Contractor *shall (599)* secure the compartment door utilizing a "SCHLAGE" brand 6-pin Everest cylinders in C123 keyway (dead bolt lock), that *shall (600)* be keyed to a 6 pin combination. The key combination *shall (601)* be 746105. This key combination *shall (602)* not be used anywhere else in the manufactured home or in the master key set.
24.3	**Master Keys**	Master keys *shall (603)* be provided and packaged separately from unit keys. The master key *shall (604)* have an identification tag stating the serial number range that the key works on.
25.0. Testing Requirements		

25.1.	**Testing Requirements**	The following additional tests *shall (605)* be required prior to delivery and may be witnessed at the discretion of the Government. • The drainage and vent system and the plumbing fixtures • The electrical system • HVAC system • Documentation explaining mold resistance measures taken Water piping *shall (606) be* tested appropriately for the type of piping used. When the manufactured home is delivered to FEMA the entire water system *shall (607)* be dry without any water in it or with using adequate amounts of RV Antifreeze as a precautionary measure to insurance against freezing in extreme conditions. The Contractor *shall* add labels that the unit is winterized using RV antifreeze and provide instructions on how to "un-winterize" the unit to be used safely to house disaster survivors. **<u>The government may request documentation showing compliance.</u>**
26.0. Labels and Unit Identification		

26.1 **Unit Designated Number**

All units *shall (608)* have a unit designation number as described below. The "FEMA Designated Number" is composed from information provided by FEMA and by the contractor, which uniquely identifies the unit.

The number *shall (609)* be as follows:

Descriptor	**Source**	**Example**
Last two digits from the year the contract was awarded	FEMA	14
Last four digits from contracted firm's contract number	FEMA	1000
Four character abbreviation assigned to contracted firm	FEMA	ABCD
Hyphen		
Last two digits from the year the task order was awarded	FEMA	13
Last two digits from contracted firm's task order number	FEMA	01
Unique code assigned to requirement version	FEMA	BA
Quantity of bedrooms	Contractor	2
UFAS Type (U = UFAS, N = Non-UFAS)	Contractor	U
Hyphen		
Incremental number assigned to each MHU produced under task order	Contractor	0056
Alpha letters assigned if options are exercised (e.g., S = sprinkler and/or W = shrink wrapped)	Contractor	SW

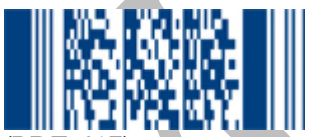
Example: 141000ABCD-1301AA2U-0056SW

26.2	**Unit Identifications**	All units *shall (610)* be identified in accordance to the following: **UNIT NUMBER PLACARD** Unit number placard *shall (611)* be placed on Exterior left front corner of the unit, when facing the unit (tongue side). The Unit Number placard *shall (612)* be as follows: • Include FEMA Unit Designation Number • Marking must be of a plain font (e.g. Arial); three inches (3") high; black colored on white background; and must be reflective ASTM D4956 Type III or better • Placement must be within three inches (3") from the bottom of the adjacent roof eve and no more than three inches (3") from the left edge of the manufactured home **UNIT CONTACT PLACARD** Unit Contact placard *shall (613)* be placed on the Interior side of front and back exterior doors, adjacent to upper peephole (top of the sign may not be any higher than 66" above the finished floor), door handle side. The Unit Number placard *shall (614)* be as follows: • Destructible Vinyl Sticker type (sticker must be applied so that it is level and plum with respect to the door edge) • Black one inch (1") high font, on white background, stating: "FEMA Owned & Maintained Unit Contact FEMA at 800-621-FEMA" • The above line must be suffixed with one-half inch (½") font stating, "(3362)" • Blue three-quarters inch (¾") high font, stating "Unit Barcode"; and approximately eight inches (8") of space to write in (with permanent marker) FEMA Barcode number **UNIT SPEC PLACARD** Unit Contact placard *shall (615)* be placed on Interior side of the water heater closet door, level, three inches (3") from latch side. The top of placard *shall (616)* be five feet (5') from bottom of the door. The Unit Data placard *shall (617)* be as follows: • White background, dark blue border, half inch (½) in thickness • "UNIT SPECS" in uppercase, blue half inch (½") high font, centered • Placard must list the information corresponding to the data labels listed below, in black one-quarter inch (¼") high font:

FEMA Designated Unit Number	*(26 characters)*	
Manufacturer's Serial Number	*(40 characters)*	
Contracted Manufacturer's Name	*(40 characters)*	
Actual Manufacturer's Name	*(40 characters)*	
Actual Manufacturer's Address	*Address1 (40 characters)* *Address2 (40 characters)*	
Actual Manufacturer's Phone	*(12 characters)*	Actual Manufacture Date: MM-DD-YY *(8 characters)*
FEMA Requirement Code	(3 characters)	FEMA Climate / Color: *(10 characters)*
Length (feet)	*(6 characters)*	Width (feet): *(4 characters)*
Height (feet)	*(4 characters)*	Fully loaded Weight (lbs): *(6 characters)*
UFAS	Yes / No *(3 character)*	Number of Axles/Tires: *(4 characters)*
Tire type/ recommended psi for transport	*(10 characters)*	Axle rating, each (weight in lbs): *(5 characters)*
Thermal (U/O) Zone	*(1 character)*	Livable area (Square feet): *(3 characters)*
Wind Zone	*(1 character)*	Roof Load Zone: *(2 characters)*
Electrical System (amps / volts)	*(7 characters)*	Electrical Supply (# wires / # avg): *(3 characters)*
Water Heater Size (gallons)	*(2 characters)*	Water Heater Manufacturer: *(40 characters)*
HVAC Manufacturer	*(40 characters)*	HVAC Size (rated tons): *(3 characters)*
HVAC Heat Strip Size (amps)	*(3 characters)*	Other 1: *(40 characters)*
Siding Manufacturer	*(40 characters)*	Siding Color: *(10 characters)*
Exterior Doors (rating / size)	*(10 characters)*	Windows (U factor): *(2 characters)*
# of Bedrooms	*(1 character)*	# of Bathrooms: *(1 character)*

<table>
<tr>
<td>26.3</td>
<td>Unit Barcodes</td>
<td>The UNIT SPEC PLACARD shall (618) have barcodes containing the same information as specified above (table). The Barcodes shall (619) be part of the UNIT SPEC PLACARD.
<table>
<tr>
<td>MFG SERIAL NUMBER
 

(code 39)</td>
<td>FEMA DESIGNATED UNIT NUMBER
 

(code 39)</td>
</tr>
<tr>
<td>INFORMATION FROM UNIT DATA PLACARD
 
(PDF-417)</td>
<td>INFORMATION FROM UNIT DATA PLACARD
 
(Datamatrix)</td>
</tr>
</table>
</td>
</tr>
</table>

	Unit Barcodes (continued)	**BARCODE INFORMATION** • **Manufacturer Serial Number** This CODE 39 type barcode *shall (620)* be encoded with the Manufacturer's serial number assigned, and it *shall (621)* match the serial numbers affixed or identified on other areas of the Manufactured Unit. The barcode *shall (622)* be only alphanumeric. • **FEMA Designated Unit Number** This CODE 39 type barcode *shall (623)* be encoded with the FEMA designated unit number (as explained above). The number *shall (624)* match the number printed on the Unit Data Placard. The barcode *shall (625)* have be only alphanumeric, no dashes. • **Information from Unit SPEC Placard (PDF-417)** This PDF-417 type barcode *shall (626)* be encoded with comma delimited information from the Unit Data Placard. Symbols (dashes and back slashes) are to be used. No commas in data fields may be used (e.g. numeric to denote thousands). The data *shall (627)* be encoded in the order listed below. Data only – no data labels – will be included. Blank fields are included, but can be blank (denoted with just a comma). • **Information from Unit SPEC Placard (Datamatrix)** This Datamatrix type barcode *shall (628)* be encoded with comma delimited information from the Unit Data Placard. Symbols (dashes and back slashes) are to be used. No commas in data fields may be used (e.g. numeric to denote thousands). The data *shall (629)* be encoded in the order listed below. Data only – no data labels – will be included. Blank fields are included, but can be blank (denoted with just a comma). • **Comma delimited order** FEMA Designated Unit Number, Manufacturer's Serial Number, Contracted Manufacturer's Name, Actual Manufacturer's Name, Actual Manufacturer's Address1, Actual Manufacturer's Address2, Actual Manufacturer's Phone, Actual Manufacture Date, FEMA Requirement Code, FEMA Climate / Color, Length, Width, Height, Fully Loaded Weight, UFAS, # of Axles / Tires, Tire Type / Recommend PSI for Transport, Axle Rating Each, Thermal Zone, Livable Area, Wind Zone, Roof Load Zone, Electric System, Electric Supply, Water Heater Size, Water Heater Manufacturer, HVAC Manufacturer, HVAC Size, HVAC Heat Strip Size, Other1, Siding Manufacturer, Siding Color, Exterior Doors, Windows, # of Bedrooms, # of Bathrooms
26.4	**Manufactured Home Serial Number**	Contractor *shall (630)* stencil in a contrasting color two inch (2") high font the manufacturer's serial number on the tongue. The stencil *shall (631)* be painted in such a location that it will not obscure the stamped serial number. The serial number stenciled *shall (632)* match the stamped serial number and serial number on the HUD data plate.

26.5	**Labels**	Contractor *shall (633)* affix a permanent indicator to identify the following : • Support Placement Location (piers, jack stands, etc.) for long term storage, • Blocking Location for Installation, • Fresh Water Inlet Location The Jack stand label *shall (634)* include the minimum quantity of jacks required per I- Beam. Also, it *shall (635)* indicate how many jacks are needed to change the tire. The Contractor *shal(636)* affix labels if the unit is winterized using RV antifreeze. The Contractor *shall (637)* provide instructions on how to "de-winterize" the unit to be used, safely to house disaster survivors

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MHU Task Order Options		
The contractor *shall* make the following options available at the request of the government. Any and all of these options can be ordered in whole or as part of any delivery / task order issued by the government as part of the awarded contract. Requiring any of the options will not obligate the government to make the option(s) part of any future delivery task order		
O1 . Shrink Wrap		
O1.1	**Shrink Wrap (option)**	If the Shrink Wrap Option is exercised, a contractor *shall (*O1.1) provide a Shrink wrap, A Shrink wrap is a low density polyethylene film made from fractional melt resin and other additives. Shrink wrapping the manufactured homes will mitigate against wear and tear during transport and storage. The shrink wrap *shall be* completed prior shipping the unit. If an MH is shrink wrapped, the damage caused, by the shrink wrap to the unit, does not have to be covered by the contractors warranty.
O1.2.	**Material Description**	The Shrink warp material *shall (O1.2)* meet the following: **Industry Standards** • ASTM D4397-91 • ASTM D4635-91 Type 1, 2 & 3; Surface 2; Finish 1 **Government Standards** • Federal Specification LP-378** Type 1 & 2; Class 1; Grade B; Finish 1 • Federal Specification LP-390 Type 1; class L; Grade 1 or 2; Category 4 • Federal Specification LP-512 Type 1; Class L; Grade 1 or 2 **Material Performance**

		• 100% virgin resin material with extremely consistent mil thickness and opacity • Ultraviolent Inhibitors to ensure two (2) year protection against UV • EVA (ethyl vinyl acetate) content should ensure a two (2) year durability protection • Minimize heat collection in warm southern climates • Ideally Meets NFPA 701
O1.3.	**Coverage**	Shrink wrap *shal(O1.3)* cover the unit and form a complete seal from the roof to the bottom frame of the unit. The bottom of the unit should not be wrapped. Shrink wrap application *shall (O1.4)* not damage units. Any part of the unit that might be damaged by the pressure of shrink wrap *shall (O1.5)* be appropriately protected by disposable padding, framing, or reinforcement. Units *shall (O1.6)* not be damaged by the application of the wrap, protection padding, or framing for the shrink wrap.
O1.4.	**Durability**	The minimum grade of shrink wrap desired is twelve (12) mil. Materials that contain UV inhibitors or other chemical treatments to mitigate microbial growth or retard flame are preferred. Shrink wrap *shall (O1.7)* be of sufficient thickness to mitigate typical transport and storage hazards. This includes but is not limited to damage to shingles caused by winds during transport, small road debris chipping or scarring the exterior of the unit, and water intrusion that occurs from prolonged unprotected exposure to the elements.
O1.5.	**Banding**	The contractor *shall (O1.8)* insure that there is sufficient banding so that the shrink wrap is able to sustained multiple trips and up to two (2) years in storage. The banding *shall (O1.9)* be a minimum of the standard three-quarters inch (¾") coated nylon / fabric product.
O1.6.	**Ventilation**	In the absence of independent documentation to demonstrate appropriate ventilation, ventilation *shall (O1.10)* be provided to minimize microbial growth. **Active Ventilation** The contractor *shall (O1.11)* include either solar ventilation or wind vent fans. Fans should be placed in front of two (2) windows on opposite sides (long side) of the units. **Passive Ventilation** The contractor *shall (O1.12)* include two (2) passive vents on each long side of the unit and one (1) passive vent on short side. All passive vents should be placed below any protruded object (e.g. HVAC). Vents should be place no higher than eight feet (8') above ground.
O1.7.	**Access "Doors"**	To allow a full size person the ability to enter and exit the unit, a standard full size zipper door *shall (O1.13)* be provided. To maximize the ease of entry and exit, the shrink wrap door will be installed so that when the shrink wrap door is opened the door will drop to the ground.

		The shrink wrap "door" *shall (O1.14)* be placed immediately in front of the manufactured home front door so that access to the manufactured home is not impaired.
O1.8.	**Reinforcements**	To maximize longevity, all shrink wrap welds *shall (O1.15)* be reinforced with shrink wrap tape. Any holes in the wrap *shall (O1.16)* be patched with shrink wrap tape. Any large shrink wrap patch *shall (O1.17)* be reinforced on the exterior and interior side of the wrap with shrink wrap tape. The front of the manufactured home unit (tongue side) *shall (O1.18)* have maximum reinforcements to mitigate wind and road damage during transport.
O1.9.	**Markings**	The shrink wrap *shall (O1.19)*have marking identifiers as follows within six inches (6") laterally from the actual location: • Electrical service connection • Water service connection • Sewer connection
O1.10.	**Identification**	To maximize identification, the exterior of the shrink wrap *shall (O1.20)* have the manufactured home identification information printed in black Three inch (3") high font, on white background; located on left front corner (facing tongue, left side); approximately two feet (2') from bottom of roof line. The information displayed *shall (O1.21)* include: • Contracted Firm's Name • Manufacturer's Serial # of the Unit have to match the manufactured home) • FEMA's unit identification number • Manufacturer (production facility) and Date of Manufacture • Quantity of bedrooms (formatted to say "Bedrooms=" and number of bedrooms) • UFAS status (formatted to say "UFAS=" and status) • Sprinkler Status (stated only if unit has sprinkler, and formatted to say "Sprinkler=" and status) • Color of Siding (formatted to say "Color=" and color) • Manufacturer's Model Number (formatted to say "Mfg Model=" and manufacturer model #) • Unit requirements o Size information (formatted to say "ground height=" and "maximum width=" and "maximum length=") o Gross weight (with furniture, formatted to say "Weight=" and actual weight) • FEMA Barcode (with space for FEMA to write in the number)

O1.11.	**Recycling**	Contractor *shall (O1.22)* provide three (3) reusable bags for the return and recycling of shrink wrap to a qualified and reliable recycler (to recycle the shrink wrapping). The reusable bags *shall (O1.23)* be able to be shipped by common carrier. At a minimum, the bag *shall* have postage and address ready for easy shipment. In larger operations, the contractor may decide to collect the reusable bags (with shrink wrap) and transport them to the recycler as a lot. Instructions on how to execute the recycling should be provided on the shrink wrap near the zipper door.
O2: Weekly Storage		
O2.1	**Weekly Storage**	When FEMA orders manufactured homes, the Agency may require that the contractor store the manufactured homes at the contractor's location. This may result from a number of logistical issues including but not limited to: delays in construction of FEMA group sites; dispatch or receiving activity at FEMA's Manufacturing Housing Storage Sites; or delivery and dispatch activity at disaster Manufacturing Housing Staging Areas. When FEMA requires the contractor to store manufactured homes, the contractor will be compensated for storing the manufactured home in one week increments, even if FEMA allows for shipping of the manufactured home prior to the end of the week. <u>Weekly Storage *shall (O2.1)* be calculated as follows</u> 1. The day that FEMA requests that the contractor start storing manufactured homes *shall (O2.2)* become the weekly anniversary date. 2. The formula that *shall (O2.3)* be used is: Remaining Unshipped from Previous Week Storage (R) plus all production (P) minus all shipments (S) equals Weekly Inventory (WI). $$R + P - S = WI$$ 3. The WI from a completed week becomes the R for the following week. <u>Examples:</u> This is the first week that FEMA requests that the contractor store units at the manufacture's site. The production rate is 125 units per week. FEMA requests that 25 units are shipped within the same week. R – the residual from the previous week – is 0 P – the amount added during the week – is 125 S – the amount shipped during the week – is 25 R+P-S = WI	0+125-25 = 100 *The weekly inventory at the end of the first week totals 100.*

		During the second week, FEMA requests that production remain the same and no units are shipped. R – the residual (or WI) from the previous week – is 100 P – the amount added during the week – is 125 S – the amount shipped – is 0 WI – the weekly inventory – is 225 *The weekly inventory at the end of the second week totals 225.*
O3: Jack Stands and ABS Foundation Pads		
O3.1	**Piers (Jack Stand)**	As an option, per FEMA request, the contractor *shall (O3.1)* provide adjustable steel piers that are capable of transmitting the vertical live and dead loads of the Manufacturing Housing Unit safety to the footings or foundation below. Adjustable Steel Piers provided *shall (O3.2)* be Commercial of the shelf (COTS) products and *shall (O3.3)* be capable of sustaining the required vertical load capacity. Adjustable steel piers *shall (O3.4)* be listed or labeled for the required vertical load capacity, and, where required by design, for the appropriate horizontal load capacity. Adjustable steel pier heights *shall (O3.5)* be selected so that the adjustable risers have a minimum of 2 in (50 mm) height adjustment when finally positioned. Adjustable steel piers *shall (O3.6)* be corrosion resistant and capable of withstanding severe weather at storage/staging locations. Piers (Jack Stand) *shall* provide piers shipped safe and secure with each unit or separately.
O3.2	**ABS Foundation Pad**	As an option, per FEMA request, the contractor *shall (O3.7)* provide squared (24" by 24") ABS Foundation Pads for each pier for the applicable Manufactured home storage area.
O3.3	**Heavy Duty Piers (Jack Stand)**	Heavy Duty Jack Stand: The purpose of a heavy duty jack stand (HDJS) is to provide support for a manufactured housing unit (MHU) when it is located at FEMA's storage or staging yard. The jack stand is used as a steel pier which is a vertical support constructed of steel for the transmission of loads from a unit to a footing. Storage and staging yards hold MHUs in FEMA's readiness inventory prior to the MHU being shipped and installed at the disaster site. Function: The HDJS *shall (O3.8)* be capable of transmitting and sustaining the vertical live and dead loads of the MHU safely to the footings or foundation below the jack stand. The HDJS *shall (O3.9)* be a screw-type jack stand that is adjustable from 19 inches to 31 inches of height. The height *shall (O3.10)* be measured from the base of the jack stand to the flat portion of the jack stand that is designed to support the MHU and *shall (O3.11)* be the working height of the jack stand not the maximum extension. The HDJS *shall (O3.12)* be rated to hold a minimum of 18,000 pounds not including the safety factor and *shall (O3.13)* be able to sustain the rated weight for the operational range (19 inches to 31

		inches in height). The jack stand *shall (O3.14)* have an appropriate locking mechanism that will hold the jack stand extension (adjustable portion) in place when it is set to a working height between 19 inches and 31 inches. The jack stand s *shall (O3.15)* be easy to install and easy to move and remain stable once placed and adjusted. All joints *shall (O3.16)* be welded. Bolts *shall (O3.17)* not be used to connect static (non-moving) parts. The jack stand *shall (O3.18)* have a stable base that allows the jack stand to be placed on flat surfaces. The stable base *shall (O3.19)* permanently attached so that the base of the jack stand lays flat on the contact surface: flat terrain (i.e. Concrete, Asphalt, gravel) or ABS pads. The jack stand *shall (O3.20)* be easily adjustable having permanent handles or other mechanisms that will allow for simple and quick adjustment to the desired height. The jack stand *shall (O3.21)* be designed so it can be attached to the frame of the MHU. The connection between the jack stand and the MHU *shall* be called the head or head plate. The head *shall (O3.22)* be appropriate to support the MHU without the need for any type of blocking or cribbing and it *shall (O3.23)* contain the appropriate head to allow lifting and leveling the MHU without any modification. The jack stand *shall (O3.24)* be designed to be carried and operable by one person without any assistance. The jack stand *shall (O3.25)* be safe (i.e. free of sharp edges with rounded edges and corners, with all surfaces being smooth, etc.), for the users. The HDJS *shall (O3.26)* be corrosion resistant, be operable in a variety of weather conditions, and withstand typical weather conditions at FEMA's primary MHU storage sites located in Selma, AL and Cumberland, MD. The jack stand *shall (O3.27)* remain usable, operable and do not degrade functionality or structure for a period of not less than 15 years with minimal maintenance (i.e. lubrication). The jack stand *shall (O3.28)* meet appropriate safety standards as defined and published by ANSI/ASTM. The jack stand *shall (*O3.29) have appropriate rating/testing information.

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